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## Central Management for the Railways

THERE seems still to be hope for a central railway management responsible to but not part of the British Transport Commission, in the scheme for reorganisation of the railways to be published in the forthcoming White Paper. The Government, although it has expressed strong views on a "substantial measure of regional railway autonomy"—which is all to the good—also has included a measure of standardisation of locomotive design among matters which must remain a central responsibility; and in view of the many economies in railway operation attributed, though not always rightly, to railway unification under the Transport Act of 1947, there is certain to be a strong body of opinion in favour of centralised design, and also perhaps central purchasing, among railway officers and others consulted by the Minister of Transport, Mr. Alan Lennox-Boyd. In addition there is the Government acceptance that the new railway areas to be set up under the new Transport Act cannot be financially autonomous, and a rather cautious attitude on the possibility of determining and publishing area financial results. There must then be some central body in charge of these and any other central railway responsibilities, such as staff and labour matters. The Act provides that the Railway Execu-

tive is to be abolished. The question is, how far the necessary central management is to be vested in the Commission itself or to be a separate body. Our own view is that the body in charge of nationalised transport as a whole should be a board of part-time directors with a full-time Chairman. Below that, but not part of it, should be central managements for the railways, London Transport, and perhaps temporarily for British Road Services. A Chief General Manager for the railways, with a small compact management unit, would be the head of the railway organisation in areas—or, it is to be hoped, "railways"—each with its own General Manager responsible to the Chief General Manager on non-functional lines. Only in this way can the principles of healthy local autonomy and limited centralisation in essentials be reconciled. A Labour M.P., Mr. Ernest Davies, who seems to have accepted the inevitable passage of the Transport Bill with realism, wrote to *The Times* earlier this week in favour of such an organisation. We do not share his doubts that there are many additional functions that can now be delegated to the railway areas, nor his dislike of the old General Managers' Conference; but we agree with his broad proposal for a three-tier structure of areas, central railway management, and the "Commission confining its activities to policy and planning and general supervision of all its undertakings."

## L.M.A. New President

IN its history, under one name or another, of 78 years, the Locomotive Manufacturers Association of Great Britain has been chary both of appointing and then changing its President. Indeed, for the first four years it got along without any official head, and has done so also at two other periods. The first appointee was Richard Peacock, and that in itself shows the lengthy tradition of the "official" industry, for Peacock, in 1838 at the age of 18, was locomotive superintendent of the Leeds & Selby Railway, 16 years before he and Charles Beyer began Gorton Foundry. Until the recent war, presidency of the L.M.A. was more or less a life job. It was held in succession by Richard Peacock, Sir William Lorimer, B. I. Greenwood, F. S. Whalley, H. Wilmot, and W. D. Lorimer. The presidency thus never went outside the "big three," viz., North British, Vulcan, and Beyer, Peacock. The recent election of Mr. John Alcock to the presidency therefore is not merely an acknowledgment of his standing as a virile and leading figure in the industry, but is a recognition of the importance to the British industry as a whole of the seven smaller builders who are full members of the L.M.A. It is a similar recognition, too, of changing times, in particular the increased production of diesel locomotives, for since 1930 Mr. Alcock has been vitally connected with diesel locomotive developments.

## Institute of Transport Presidency

MR. JOHN ELLIOT, Chairman of the Railway Executive, has been elected President of the Institute of Transport for 1953-54, and will assume office on October 1 on the retirement of Mr. C. T. Brunner. Congratulations to Mr. Elliot on his election will be combined with admiration for the spirit of service to transport which led him to accept this position amid his many other preoccupations at the present time. The office of President combined with his other duties will make demands which even Mr. Elliot's characteristically abundant energy may have difficulty in meeting, and the reasons will be well understood if he is unable to be present on some of the many occasions when the President is invited to attend. Since becoming Chairman of the Railway Executive in 1951, Mr. Elliot has resolutely followed the line that the business of transport is the movement of traffic regardless of the particular form in which its agencies may be organised as a result of political policies. This doctrine, expressed on many occasions with the direct forcefulness which has been the foundation of the good relations he has enjoyed with railway staff of all grades, has done much to promote united effort in a harassing period of railway history.

### Institution of Locomotive Engineers Summer Meeting

**B**Y a happy and not perhaps entirely accidental combination of circumstances, the emphasis at the summer meeting of the Institution of Locomotive Engineers in Lancashire last week tended to be on forms of traction other than steam. A short account appears on another page. Members on their visits to locomotive and other works concerned largely with electric and diesel traction could see the important part played by British manufacturers in the export trade. At the Vulcan Foundry, locomotives for railways in different countries were seen under construction and test, representative of four types of traction; the English Electric Co. Ltd. at its Preston works showed a wide variety of electric and diesel-electric locomotives and equipment, also largely for railways overseas; and at the Prescott works of British Insulated Callender's Cables Limited was a display of overhead equipment and power cables indicative of that firm's world-wide interests in railway electrification. In keeping with this, at the Institution dinner Mr. C. M. Cock, its President, stressed the advantages of electrification and urged that the steam locomotive, long prominent in the British railway shop window, be exchanged for another feature. As regards electrification of British Railways many will agree with him, though with less enthusiasm; but even with immediate financial sanction for electrification schemes, steam must long remain the principal motive power. On many overseas railways for various reasons there still is a bright future for steam traction.

### Fiftieth Anniversary of Mersey Electrification

**F**IFTY years ago the electrical press, when writing on traction matters, was putting inverted commas round the word "contactor," and the motor coaches for the Mersey Railway electrification of 1903 were equipped with drum controllers operated by compressed-air engines. Similar British Westinghouse equipment was being fitted at the same time to Metropolitan District Railway stock for direct comparison with the B.T.H. contactor system. The Mersey equipment had the special interest of being supplied for the first conversion in England of a steam line to electric working, of which event May 3 last was the fiftieth anniversary. Electro-pneumatic operation of the drums permitted the remote control of several equipments and meant that the driver was not handling directly a piece of switchgear carrying the traction motor current. His controller was in a 14-V. circuit which operated the magnet valves for admitting air to the air engines. Acceleration was automatic and took about six seconds to make the nine notches up to full parallel. A so-called "lap" position of the controller enabled the notching to be arrested at any point in the sequence. The Mersey equipments have something in common with the controllers fitted to L.M.S.R. Euston-Watford stock as late as 1932 in which controller drums are rotated by a pawl and ratchet, although here the controllers are in the low-tension circuits of the contactor operating coils and are not main power drums.

### The Indian Railways Centenary

**T**HE closing on May 17 of the Indian Railways Centenary Exhibition at New Delhi will mark the end of a period of ten weeks during which it has been the dominant feature of the various celebrations commemorating the hundredth anniversary of the opening of the railway from Bombay to Thana. It had been intended to close the exhibition on April 16, the centenary date, but its popularity and success made a month's extension necessary. All who visited it spoke highly not only of the selection and arrangement of the exhibits, but of the general organisation and amenities on a site that previously had been desert land. Some impressions of the exhibition appeared in our issues of April 17 and May 1, and the exhibits of British and other manufacturers supplying the Indian Railways were reviewed in our March 13 issue. Elsewhere this week we reproduce some more photographs taken in the course of the exhibition, and give a report of

the Centenary Day celebrations held in the exhibition grounds and elsewhere on April 16, the day being observed as a holiday on all railways.

### Overseas Railway Traffics

**C**ANADIAN PACIFIC gross earnings for March at £12,958,000 (at \$3 to the £) and working expenses at £11,827,000 both slightly exceeded the 1952 figure, net revenue being £1,131,000 against £1,179,000 for March of last year. Aggregate net earnings for the first quarter of this year were £1,467,000, compared with £1,677,000 last year, a decrease of £210,000. Canadian National operating revenues for March, all inclusive, were £20,130,000 and operating expenses £18,696,000, with a net operating deficit of £1,434,000, against a deficit of £1,646,000 for March, 1952. The deficit on the first quarter's operations this year was £705,000, compared with one of £1,702,000 for the corresponding months of 1952, which represents some slight improvement. It is too soon yet to try to estimate the effects of rate increases and wage awards, some of the latter being retrospective.

### Electric Train Energy Consumption

**T**HE decision by London Transport to purchase light alloy rolling stock for its railways was based on the savings in energy consumption expected to arise from the saving in weight. These, it was calculated, would offset the extra capital cost of the cars. To check the actual savings achieved, a series of comparative tests with two "R" stock trains, one of steel and the other light alloy, was arranged after delivery of the first lightweight cars with driving positions. The tests, described on another page, were carried out by the Development Division of the Chief Mechanical Engineer's Department, in collaboration with the Testing Section of the Electrical Engineer's Department, and their results have amply justified the original calculations. On a run of just over five-eighths of a mile (the average distance between stations for the whole of the District Line) the saving in energy for a lightweight train as compared with a steel train would amount to some 12½ per cent for equal (start-to-stop) run times.

### Position Lights in Switzerland

**F**OR many years it was customary on the Swiss Railways to have an individual point indicator to each pair of points, or in certain cases each set of slip switches, and to use what may be called shunting prohibition signals which in the "off" position did not in themselves constitute any authority to move. This practice was met with practically everywhere in Central Europe at one time, but a tendency to use shunting signals as understood in Great Britain began to show itself in some countries after the 1914 war. A few years ago Switzerland followed suit and a great improvement in the working was effected at some of the larger stations. This has been further developed in the relay interlocking installation opened about 12 months ago at No. 2 signal box, Geneva (Cornavin) where all shunt movements are fully signalled and point indicators abolished. It was decided to adopt the position-light shunt signal, showing three aspects in white lights only, the third, with the lights vertical, indicating that the signal in advance is "off." This installation incorporates route-setting, hitherto used only for remote control working at Lucerne and in the Gotthard Tunnel.

### Powerful Locomotives for South Africa

**T**HE South African Railways will shortly take delivery of the first batch of 40 locomotives now being built by Henschel & Sohn, G.m.b.H. They are for the 3 ft. 6 in. gauge and of considerable proportions, having a tractive effort at 75 per cent boiler pressure of 43,800 lb. and weighing 227 tons in working order. Among the features embodied in the design is the liberal application of roller bearings, which should contribute to ease of maintenance and also ensure considerable mileage between repairs. The

boiler has an all-welded inner and outer firebox with combustion chamber, and is fitted with four circulators welded to the inner firebox. Commonwealth cast-steel frames with integral smokebox saddle and cylinders are provided; cast-iron bushes are fitted. Of the 40 locomotives now building, one will be fitted with Henschel condensing equipment which will be used as a prototype for the engines of a similar class being built for the South African Railways by the North British Locomotive Co. Ltd. The locomotives are described and illustrated elsewhere in this issue.

### Traffic Costing

**A**N outline of the purposes and methods of traffic costing in transport management, by Mr. A. W. Tait, Director of Costing, British Transport Commission, in the current issue of the *British Transport Review* may not persuade those still sceptical of the new science and suspicious of the attitude it engenders towards ancillary activities. On the purposes of costing, he states that with denationalisation of much of British Road Services and consequent introduction of more competition between rail and road for long-distance traffic, the opportunity for comparative study of rail and road costs will be more limited than was possible under the Transport Act of 1947. With greater latitude for the railways in charging under the new Act, it may perhaps be claimed that there is more scope for traffic costing; but the accuracy of the process, to be considered against its cost in items such as the time and manpower demanded by censuses and the like, still has to be proved to the satisfaction of many.

If the accuracy is considered adequate and the end thought to justify the means of costing without undue insistence that each separate activity shall pay its own way, he has made a good case for it as a useful adjunct in the setting up of local transport managements as well as in charging policy and practice and in the choice between rail and road by an undertaking owning both. If, as is to be hoped, the new organisation of railways in this country results eventually in railways of manageable size—under a central railway management—with considerable road freight ancillaries, some means will be needed to measure the results of local decisions as to charges and relate them to charging on a national scale under the central management. It is claimed that costing methods can provide this measurement more cheaply and effectively than traditional bookkeeping can hope to do; this may indeed be the case in time. The essence of the flexibility needed for efficient transport operation, Mr. Tait says, is that the basic local unit should not be too large—probably nearer the size of the local bus company than that of the existing railway Regions; and railways, he adds, will also need separate administrative agencies to run through services and co-ordinate the activities of the local administrations. He appears to be thinking of some form of unified State-owned transport; whilst we do not agree with his suggested organisation, the idea of decentralisation is sound, and the size of the "local bus company," as satisfactory at least from the point of view of costing, is an interesting suggestion in the light of the traffics of, and areas served by, the existing bus undertakings.

Discussing the existing financial and statistical apparatus of nationalised transport, he points out that whilst "what the traffic will bear" was the paramount railway charging principle up to the first world war, there was some progress between the wars, more particularly in improving costing in the main-line railways' mechanical and civil engineering departments. Domestic statistics were developed and supplemented by surveys by special research teams, for control of traffic operations. It was only, he states, for freight terminal working that the attempt was made to reduce costs to final output. Bearing in mind the progress made in the fields chosen, and the known high cost of freight handling at terminals in the face of growing road competition, it may be that the main-line companies were right in applying costing methods where they did. They were content in many cases, as for instance in the provision of restaurant car facilities, to accept losses on activities

which it was hoped, and often rightly, would help to create, or as in the case of restaurant cars prevent the loss of, traffic. This is opposed to the recent tendency, after applying costing methods, of discontinuing activities shown by such methods to be in themselves unremunerative. If this tendency is opposed, and a close watch kept on the cost and probable nuisance value of special surveys and other means of collecting costing information, the new science may well prove to be of value, especially with the new freedom for the railways in charging.

What is disquieting, however, is the close grip on costing—despite Mr. Tait's approval of decentralisation—maintained by the B.T.C. Costing work which was done successfully by the accountants of the main-line companies now is done in the Regions of British Railways under the supervision of the Commission. The Commission, and not the Railway Executive, seems to have taken control because road transport costs have been involved. In any case, even if special Railway Executive officers, and not B.T.C. officers, were in charge, this would be an example of functional organisation misapplied. What the accountants of the main-line railways could do between the wars, those of the Regions, with longer experience and recent developments in technique, can do now; and they should report to their Chief Regional Officers—or to the General Managers, as they should be called, of the new railway areas. There is scope here in reorganisation of the railways under the new Act.

### Appearance of Stations

**G**ENERAL SIR DARIL WATSON'S report to the Railway Executive on the appearance of stations dealt with a subject of such interest to the public that the Press was invited last week to a conference at which its contents were discussed. Some 350 stations were visited, about 150 by the General himself in company with the Chief Regional and Departmental Officers concerned, and 200 more by Mr. R. Varley, formerly General Manager & Engineer of the Mersey Railway, who paid special attention to Lancashire and Yorkshire. All concerned were asked to undertake a drive for tidiness of station premises a fortnight before the visits began, but while the inspections were in progress various devices intended to produce tactical surprise were used. The General spoke with professional admiration of the extent and accuracy of the railways' intelligence system, although he seems to have had some success in appearing where he was not expected.

The areas covered by General Sir Daril Watson himself were London, Manchester, Birmingham, Cardiff, Liverpool, Newcastle, and Glasgow. His visits were made at all times of day, and he was generally satisfied with what he saw. Cleaning and tidying at the larger centres was a continuous process, while at the smaller stations it took place four times a day. It is an encouraging sign of the spirit among the staff that some of the best efforts were seen at stations in the most depressing surroundings, or where painting was long overdue. These drawbacks had not been made an excuse to sit back and wait for expensive renovations to be put in hand, but improvements within the reach of local staff had been carried out and had done much to divert the eye from a depressing background. General Sir Daril Watson recommends the principle adopted in particular by the London Midland Region, that in all cases stations should go ahead with erecting the new British Railways standard signs without waiting for a repainting programme, because their style and colouring add a note of brightness. He noted that station staff were responsible only for cleaning signs within their reach, and therefore proposes the issue of long-handled soft brooms so that the higher ones can be brushed down daily without enlisting the services of the engineers. Nameplates hanging under lamps, as adopted by the former Southern Railway, have been found fully effective for station identification at night, and will be extended as rapidly as possible. A theoretical objection that the lamp dazzles the eye without illuminating the plate is not valid when the distance between the two is properly adjusted, and, no doubt, when



the plate is maintained at the standard of cleanliness now envisaged. Large name signs will be sited near existing lamps or independently illuminated. Poster display can have the same reviving effect on a slightly dilapidated station as new signs, and the General particularly commended the tidiness and symmetry of displays he had seen in the Scottish Region.

Ladies' waiting rooms are described in the report as generally "grim," but well looked-after where there is an attendant. The grimness is an effect of the heavy style of furnishing, for where a lighter style has been chosen, as at stations of the former North Eastern Railway, the appearance is much better, and the furniture attracts fewer assaults from outraged aesthetes. General waiting rooms and men's and women's lavatories are targets for malicious damage, defacement and pilfering on a scale that reflects a real social problem. Nothing seems able to stop the scribbler on walls but tiling, which is being used at new stations but is an expensive solution. Another symptom of this contempt for property is the wanton damage to shoulder lights in L.M.R. suburban coaches, which led to the decision last week to withdraw these fittings from 1,800 non-corridor thirds after damage totalling £1,200 had been sustained in a four-week period. General untidiness among travellers is a further trait which seems unlikely to disappear, and in suggesting that litter baskets should be sited by the men who have to sweep up platforms and concourses, General Sir Daril Watson clearly expected the main burden of putting the litter into the baskets to remain with the station staff.

In summing up, General Sir Daril Watson commended the keenness of many station staffs whose work he had seen, and approved the principle of the various competitive schemes designed to maintain interest in the condition of premises. With regard to refreshment rooms, it seems that like Dr. Watson he "saw but he did not observe," for by a refinement of organisation that the public may find hard to appreciate, his terms of reference did not include liaison with the Hotels Executive. He suggested at last Friday's conference, however, that where both exist, refreshment and waiting rooms may be combined, as has been done at Bletchley, with advantage to each. The report does more than put forward certain practical suggestions, for its presentation has shown all responsible for station cleanliness the extent of public interest in their efforts, and so may stimulate a more uniform level of endeavour in a task with setbacks and obstacles that have now been freely admitted. In the meantime some £4 million have been spent on repainting and renovation of stations since nationalisation and by the end of this year more than 4,400 will have been dealt with. Special decorative schemes for the Coronation period have been prepared for 145 stations, and visitors from overseas will be welcomed by displays of this kind at Harwich, Dover Marine, Folkestone, Newhaven, Southampton, and Plymouth.

### Summer Timetables, Western Region

**S**OME notable improvements of service are planned by the Western Region to be introduced with the summer timetables on June 8; the aim behind several of them is to spread facilities more evenly over the day than previously. On the West of England main line, a new summer restaurant car train will leave Paddington for Newquay and Falmouth at 9.30 a.m., calling at Reading and Newbury to pick up, non-stop over the 89.7 miles thence to Taunton in 95 min. (56.6 m.p.h.), and calling thereafter at Exeter, Newton Abbot, Plymouth (2.20 p.m.), and principal stations in Cornwall, Newquay and Falmouth both being reached at 4.40 p.m.

The 1.30 p.m. from Paddington is to be accelerated throughout, reaching Exeter at 4.53 p.m., Plymouth at 6.25 p.m., and Penzance at 9.10 p.m., 17, 30, and 40 min. earlier than now. In the late afternoon, in view of the excellent service given from London to Taunton and beyond by the 5.30 p.m. express, the 5.5 p.m. from Paddington to Plymouth is to run from London to Bath, Bristol and Weston-super-Mare only, and the 4.15 p.m. down semi-

fast to Weston is to be extended to Plymouth instead, thus giving an additional through evening service from Reading, Swindon, and Chippenham to Taunton and beyond.

In the up direction the 7.30 a.m. from Truro, hitherto an "all stations" to Newton Abbot, will become fast from Plymouth (9.35 a.m.), and is to be extended to Paddington, calling at Teignmouth, Dawlish, Exeter (dep. 11.25 a.m.), Taunton, and Reading, with a London arrival at 2.55 p.m.; a restaurant car will be provided from Plymouth. To balance the workings, the 8 a.m. from Penzance to Paddington now is to be made "all stations" from Plymouth, and to terminate at Exeter. But a much faster express service in lieu of the latter will be provided by the return working of the 9.30 a.m. from Paddington; this will leave Falmouth at 9.40 a.m. and Newquay at 10 a.m., and from Par the combined trains will call only at Plymouth (12-12.5 noon), running thence non-stop to Paddington and arriving at 4.30 p.m. This train will act as a relief to the up "Cornish Riviera Express," which is to go back from 9.45 to its original 10 a.m. departure from Penzance, and to be due in Paddington at 4.45 p.m. The 11 a.m. and 1.20 p.m. from Penzance will both have their times pared by 5 min. to reach Paddington at 7.10 and 9 p.m. respectively. The "Cornishman" (Wolverhampton-Penzance) is to stop at Taunton instead of slipping coaches, and will stop there in the reverse direction also.

Between Paddington and Bristol the pre-war 1.50 p.m. from Bristol is to be restored, calling only at Bath and slipping a coach at Reading; Paddington will be reached at 4.10 p.m. The balancing down working will be an entirely new express at 7.50 p.m. from Paddington, calling at Reading and Bath, and reaching Bristol at 10.14 p.m.; before the war Bristol was served by slip coaches detached at Stoke Gifford from the then 7.55 p.m. down Fishguard boat express, reaching Temple Meads at 10.17 p.m., but Bath had no down service at this hour. The 11.15 a.m. down "Merchant Venturer" will be accelerated to reach Bath in 106 min. (60.5 m.p.h.), and Bristol at 1.22 p.m., 10 min. earlier; but the 1.15 and 5.5 p.m. down, also calling only at Bath, will still be allowed 2 hr. 22 min. (pre-war 2 hr.) and 2 hr. 17 min. respectively.

Coming up, the 12 noon from Bristol will be accelerated 10 min. to reach Paddington at 2.30 p.m., with 77 min. (public time 80 min.) allowed from Swindon (60.2 m.p.h.). In these circumstances it is surprising that the 11.45 a.m. from Bristol to Paddington could not have been accelerated from its present 130 min. for the 117.6 miles via Badminton, to give at least one post-war 2-hr. service between Bristol and London; before the war there were two 1½-hr. trains (the "Bristolian") and five in 2 hr. (three with Bath stops), while the 7.50 a.m. up needed only 130 min. with two intermediate stops.

The increasing importance of South Wales traffic is reflected in increased express services. A new daily restaurant car train, called the "Pembroke Coast Express," is to leave Paddington at 10.55 a.m., calling only at Newport and Cardiff to Swansea (3.21 p.m.), and after that at principal stations to Carmarthen, Tenby, and Pembroke Dock. The 8.55 a.m. down will be relieved daily, as in previous summers, by the 8.40 a.m. to Pembroke Dock; the former will call additionally at Bridgend, Port Talbot, and Neath, but with the help of 9 min. acceleration to Newport (11.31 a.m.) will reach Swansea at 1.17 p.m. as before. The 11.5 a.m. down also will be accelerated 9 min. to Newport (2.28 p.m.) and 23 min. to Swansea (4.16 p.m.), and the 5.55 p.m. ("Red Dragon") 8 min. to Swansea (10.37 p.m.).

In the up direction among the trains to be accelerated are the "Red Dragon" by 5 min. (Paddington 1 p.m.) and the 10.50 a.m. from Swansea by 10 min. (Paddington 3.30 p.m.). The return working of the "Pembroke Coast Express" is to be at 7.45 a.m. from Pembroke Dock, 8.18 a.m. from Tenby, 10.35 a.m. from Swansea, 11.56 a.m. from Cardiff, and 12.18 p.m. from Newport, thence non-stop to Paddington, arriving at 3.10 p.m. There will be a considerable rearrangement of the up afternoon and evening trains from South Wales. The 12.20 p.m. from Neyland (2.50 p.m. from Swansea) will leave 20 min. earlier, and reach London at 7.20 p.m., 30 min. earlier. The 1.30



p.m. from Pembroke Dock (4.40 p.m. from Swansea), will leave these stations at 1.0 and 3.50 p.m. respectively, and calling only at Cardiff and Newport after leaving Swansea, will be in Paddington at 8.5 p.m., 55 min. earlier. The Saturday 5.30 p.m. from Swansea to Paddington will run daily, starting at 5 p.m., stopping additionally at Neath, Bridgend, and Reading, and reaching London at 9.25 p.m.

The principal express services from Cardiff to London will now therefore leave at well-spaced intervals at 8, 10 and 11.56 a.m., and 12.20, 3, 4, 5, and 6.20 p.m. On Saturdays, as usual there will be expresses at hourly intervals throughout the day at 55 min. past the hr. from Paddington to Swansea or beyond, from 7.55 a.m. to 6.55 p.m. inclusive (except 4.55 p.m.), and with additional trains at 8.40 and 11.35 a.m., and 1.50 and 3.45 p.m.

On the Birmingham line the 12 noon and 3 p.m. from Snow Hill will both be accelerated by 10 min. to reach Paddington at 2.25 and 5.25 p.m. respectively. On all main routes, to and from the West of England in particular, the week-end provision, both to and from London and the Midlands and North, is on the usually lavish scale, but there are no new developments of particular note.

### Electric Locomotives for Shunting

AN examination of the possibilities of using d.c. electric locomotives for shunting, by Dr. Ing. Leopoldo Zamboni and Dr. Ing. Tomaso Zattoni, was published recently in *Ingegneria Ferroviaria*, and has been reprinted in the electric traction edition of the *Bulletin of the International Railway Congress Association* for April. The authors deal with practice in Italy, where on the remaining three-phase lines some 25 per cent of the shunting locomotives are electric because of a surplus of low-speed machines relative to traffic requirements. It is stated that in this instance shunting duties have been a satisfactory method of absorbing the surplus. On the Italian d.c. lines, however, there is no such surplus and only 6 to 7 per cent of the stock of shunters is electric. The authors analyse the characteristics of shunting duty and describe tests with four different locomotives in which the following cycle of movements was gone through: drawing a rake of 180 tons forward for 328 yd.; setting back to the starting point with the same load; running forward light for 328 yd.; and reversing to couple up to the load again. The locomotives were an Italian State Railways "E.626" class operating on the series notches only; an "E.621" with metadyne control; an ex-U.S.A. diesel-electric; and a six-coupled steam locomotive. Average times for the cycle of operations were 316 sec. with the "E.626" and the diesel-electric; 319 sec. with the metadyne locomotive; and 394 sec. with the steam locomotive.

Considering the design of electric locomotives for shunting, the authors state the requirements of continuous high tractive efforts at low power, which might be met theoretically in a 3,000 V. locomotive by using only two motors in a single grouping. With this arrangement, however, the ratio between the lowest permissible speed (governed by the motor current) and the maximum would not be better than 2.5, and if maximum tractive effort was developed at 3.7 m.p.h., the highest speed would be about 9.3 m.p.h., which would be much too low for transfer duties. This makes it necessary to use more motors and alternative groupings, or to have a mechanical change-speed gear between the motors and the wheels. The use of motors of higher power than actually required, with fixed reduction gearing adapted to a suitable maximum speed, and resistances for intermediate speed control, has the drawback of requiring high-capacity resistances, possibly with forced ventilation. It is therefore concluded that the complication and cost of a d.c. electric shunting locomotive can be justified only where particularly heavy and intensive service is required, and that the policy of the Italian State Railways should not be to extend the electrification of sidings used solely for shunting beyond its present practice but to take opportunities of replacing steam shunting locomotives now employed in such sidings by diesels.

Another approach to the problem of electric shunting

is the dual-power locomotive, taking current from overhead equipment where it is available and operating elsewhere with a diesel engine and electric transmission. In the latest version of the "Tem" shunter of this type used on the Swiss Federal Railways the single traction motor is fed with low-frequency a.c. stepped down from the overhead line to the range of 50-220V., or with d.c. from an engine-generator set. In the latter case the voltage variation for speed control (12-180V.) is obtained by variation of the diesel engine speed, supplemented at low r.p.m. by weakening the separately-excited field of the generator. Further and more powerful machines of the same type have been ordered, rated at 350 h.p. on an electrical input and 200 h.p. when supplied from the diesel-generator set.

### March Operating Results

THE month of March generally produces a large volume of freight train traffic. This year British Railways forwarded in the 4 weeks to March 22 a tonnage of 23,647,000, a record for any 4-week period since nationalisation. Coal and coke accounted for 14,488,000 tons, also a record quantity, and mineral loadings of 5,141,000 tons were exceeded only in November, 1952. Unfortunately, the merchandise and livestock tonnage of 4,018,000 was the lowest for any March period. The change in the make-up of originating freight traffic is evident from the table below, comparing March, 1953, with 1952 and 1948:—

TONNAGE ORIGINATING IN MARCH PERIOD ('000's)

	1953	Inc. or dec. on 1952	Per cent	Inc. or dec. on 1948	Per cent
Merchandise ... ..	4,018	-349	-8.0	-489	-10.8
Minerals ... ..	5,141	+288	+5.9	+648	+14.4
Coal & coke ... ..	14,488	+668	+4.8	+2,064	+16.6
Total ... ..	23,647	+607	+2.6	+2,223	+10.3

The March decrease in merchandise of 8 per cent from 1952 is not exceptional. During the first 12 weeks of this year, high-class traffic declined at the same extent of a million tons. In these 12 weeks 1,679,000 more tons of coal and coke were carried, an increase of 4.1 per cent, and 523,000 more tons of minerals, an increase of 3.6 per cent. From April to September coal forwardings are likely to be lighter and should then rise to a new peak in October and November. The total coal output for the first 16 weeks of the year increased by 524,500 tons to 72,198,100 tons, but a rise in production of 0.7 per cent does not hold out any prospect of 1953 rail carryings approaching the 1937 movement of 188 million tons.

The average length of haul for all classes of traffic was fully a mile shorter in March, though the transit of merchandise lengthened by  $4\frac{1}{2}$  miles to the record distance of 134 miles. Minerals were hauled 78 miles, 4 less than a year ago; coal and coke went the same average distance of 57 miles as in 1952. Owing mainly to the greater coal tonnage, net ton-miles rose by 8.9 million to 1,881.6 million (0.5 per cent). For the 12 weeks to March 22, net ton-miles were 5,447.6 million, about 3.8 million over 1952 (0.1 per cent).

### RAILWAY OPERATING STATISTICS

An average wagon load of 8.8 tons at starting point for all traffic reflected an improvement in the loading of coal and coke to 11.67 tons per wagon. That was the highest all-line average on record, though well below the North Eastern Region's coal load of 13.39 tons per wagon. The North Eastern also had the highest wagon load of merchandise, 4.33 tons. The general average of 4.07 tons was held down by the poor return of 3.87 tons from the London Midland Region. It is worth noting that the higher tonnage passing in March was conveyed in 4,000 fewer wagons than were used a year ago. Loaded freight

train-miles were reduced by 90,000 (0.9 per cent), while 83,000 more empty train-miles were run, an increase of 6 per cent.

Owing to the preponderance of heavy traffics, there was some loss of mobility. Freight train speed dropped from 8.45 to 8.34 m.p.h., in spite of good returns of 10.56 m.p.h. from the North Eastern and 10.4 m.p.h. from the Scottish Region. The other Regions moved traffic slowly in comparison, the Western's speed falling by nearly 9 per cent from 8.83 to 8.05 m.p.h. British Railways worked 1,126 net ton-miles in a train hour, 14 fewer than a year ago. The Western Region was responsible for most of the loss of output. Wagon-mile statistics tell much the same story. Loaded wagon-miles were down 2.3 million and empty wagon-miles up 3.1 million, making an increase of 762,000 in the total (0.2 per cent). The wagon-miles worked in a train-hour numbered 223 against 226 in 1952. The principal loss was in the Western Region, which worked only 199 wagon-miles in a train-hour, 21 fewer than last year.

The regrettable deterioration in the Western Region's operating results cannot be attributed to pressure of traffic. During the 12 weeks to March 22, the Western's originating tonnage was less by 129,000 tons (1.1 per cent). The Region forwarded 30,000 fewer wagons (2 per cent) and worked 2,530,000 fewer wagon-miles (1.3 per cent). It worked 675,000 more ton-miles, a small addition of 0.1 per cent. There is no apparent reason why these traffic conditions should have required the running of 53,000 more freight train-miles (0.9 per cent) and an increase in train engine-hours of 45,000 (6.4 per cent). Over the whole system freight train-miles were curtailed by 65,000 (0.2 per cent) and freight train-hours were merely 6,000 higher (0.2 per cent), because the Western's increase wiped out savings in the other heavy Regions.

#### RAILWAY PASSENGER TRAFFIC

British Railways originated 63,642,000 passenger journeys in the month of February, 7,011,000 fewer than in 1952. This decrease of 9.9 per cent comes on top of a loss of 2,583,000 passengers in January (2.9 per cent). The Southern Region alone had 3,286,000 fewer passengers in February, a decrease of 11.8 per cent, though a decrease of 1,565,000, or 9.8 per cent, in the London Midland Region may represent almost as serious a loss of receipts.

In February the number of first class passengers was 1,370,000, a decrease of 227,000 (14.2 per cent). The London Midland Region, which originates more than a third of all first class travel, lost 70,000 passengers (12 per cent); the Southern Region had an even larger decrease of 73,000 (17.7 per cent).

London Transport originated 45,461,000 journeys on its railways in the 4-week period to March 22, a decrease of 1,031,000, or 2.2 per cent. During the 12 weeks to March 22, the aggregate number of journeys was 134,792,000, a decrease of 7,080,000 or 5 per cent; railcar miles were cut by nearly 2½ million (4.8 per cent).

#### ROAD TRANSPORT

British Road Services carried 3,237,000 tons in the March period, 274,000 tons below 1952 (7.8 per cent). During the first 12 weeks of this year, Road Services lost 1,239,000 tons of traffic, or nearly 12 per cent, and reduced vehicle miles by 16,225,000, or over 9 per cent.

In the March period road passenger transport carried 174.7 million people, 122,000 more than in 1952 (0.1 per cent). The Tilling group had 100,000 fewer passengers, but the Scottish group carried 222,000 more. During the 12 weeks to March 22, the two groups carried 516.3 million passengers, an increase of 3.1 million (0.6 per cent), and ran 117.7 million car-miles, an increase of 934,000 (0.8 per cent) almost equally divided between the two groups.

London Transport carried 281.8 million passengers by road in the 4 weeks to March 22, a decrease of 580,000 (0.2 per cent). In the first 12 weeks of the year, 818.1 million road journeys were made, a decrease of 40.6 million

(4.7 per cent); the number of road car-miles run was 97.5 million, a decrease of 1.4 million (1.4 per cent). By rail and road together, London Transport carried 952.9 million passengers in these 12 weeks—47.7 million fewer than in 1952 (4.8 per cent). Serious as this loss of half a million passengers a day was, a fall of 2.9 per cent in London Transport's receipts for the 4 weeks to April 19 foreshadows leaner traffic returns for that period.

#### INLAND WATERWAYS AND DOCKS

In the 12 weeks to March 23, 1952, Inland Waterways originated 299,000 more tons of traffic than in 1951 (10.9 per cent). In the corresponding period this year they lost 98,000 tons (3.2 per cent). Like the state-owned railways and road services, the waterways are failing to retain general merchandise; coal forwardings now represent more than half of the total canal tonnage. During the 12 weeks to March 22 this year, B.T.C. docks and wharves shipped 6,919,000 tons of coal, coke and patent fuel, an increase of 470,000 tons in 1952. The coal shipments constituted 72 per cent of the whole outward traffic of 9,600,000 tons. The other principal export was 1,765,000 tons of oil and spirit. The main import was 2,319,000 tons of oil and spirit, representing nearly 39 per cent of the total inward traffic of 5,962,000 tons. Landings of iron ore increased by 93,000 tons to 763,000 tons, two-thirds of which were discharged at South Wales ports.

### Letters to the Editor

*(The Editor is not responsible for opinions of correspondents)*

#### Southern Railway Steam Stock

May 2

SIR,—The caption to the exterior photograph of the renovated Hastings line stock, reproduced on page 430 of your April 10 issue, might mislead those not familiar with S.R. stock.

The high corridor window lights are not a characteristic peculiar to Hastings (S.E.C.R.) line stock. The building of stock with high corridor window lights commenced generally about 1931, since when all S.R. side-corridor stock has been so fitted. What is, however, a characteristic of the Hastings stock, which shows well in the photograph, is the almost straight sides, there being practically no increase in width above the bottom of the body, to limit the width to the loading gauge. This makes a "Hastings" coach immediately recognisable either on its own or when marshalled with other stock.

Yours faithfully,

J. T. HOWARD TURNER

Bickleigh, 38, Alexandra Road, Epsom

#### The Rise of the Diesel

May 11

SIR,—In your February 13 issue you printed a letter which said that the U.S.A. Class I railways would own more diesel than steam locomotives before long. At the end of March ownership consisted of 15,081 complete diesel locomotives as operated, 14,760 steam and 661 electric locomotives—a total of 30,502. The numbers available for traffic were 14,905 diesel, 12,976 steam and 625 electric locomotives—a total of 28,506. In twelve months to March 31 this year, 5,350 steam and 13 electric locomotives were retired and the total stock of all types was reduced by 2,830. In 1952 the Pennsylvania, which is the largest owner of both diesel and electric engines, installed 246 new diesels and retired 434 steam engines. Its annual report stated that greater use of diesel power had improved the quality of freight service and effected economies.

Yours faithfully,

R. BELL

Frogmal, N.W.3

## THE SCRAP HEAP

### Top Secret

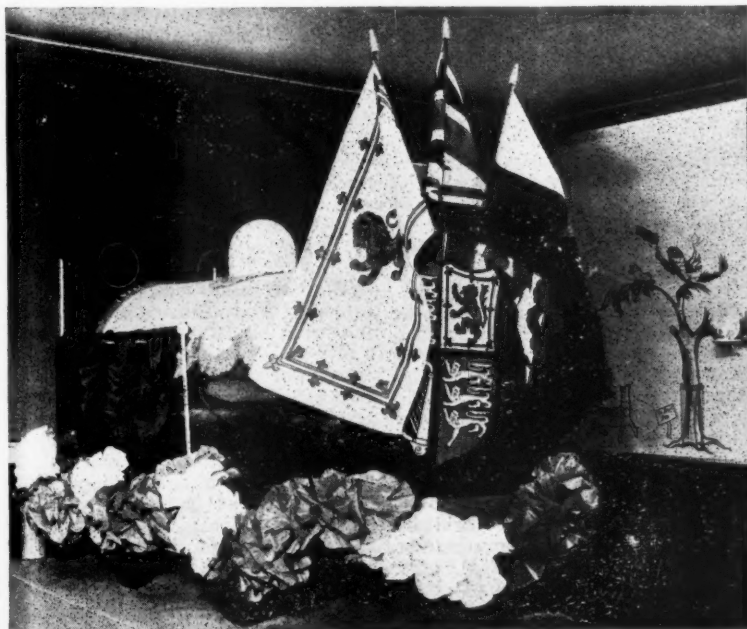
The cold weather the other day in a town where trams were abolished 20 years ago had prompted one of the clerks—aged 21—to ask about the unknown land of trams. "Please, do trams slide about when it's icy?" she asked. "No. They stick to the straight and narrow." She thought for a moment, puzzled. And then her puckered brow cleared. "Of course, they can't skid," she said slowly, with a mixture of triumph and self-reproach, "because they're fastened on at the top." — *From "The Manchester Guardian."*

### Coronation Carpets

Three tons of carpets, the first of three consignments from Glasgow to St. Pancras for the Coronation in Westminster Abbey, arrived in London at 7 a.m. on Wednesday, April 29. A railway inspector accompanies the consignments throughout their journeys. The carpets have been specially manufactured for the ceremony by James Templeton & Co. Ltd., of Glasgow. They are being sent by the express service leaving Buchanan Street Goods Station, Glasgow, at 6 p.m., which reaches St. Pancras at 7 o'clock the next morning.

### Royal Train Decoration

The accompanying illustration is of a model intended to show a typical decoration of a royal train engine. It is one of the exhibits at the "Royal Occasions" exhibition now being held at the Tea Centre in Regent Street, London, to show, in the organisers' words "some of the things made in honour of royal events of the past."



Decoration for a Royal Train locomotive

### Famous Last Words

Raymond Loewy, the industrial designer, has discovered the secret of our triumphal 20th-century evolution: "We have now reached the stage where locomotives are more beautiful than most women." — *From the "Daily Mail."*

### Timetable Shortcomings

The (British Railways) summer timetables now appearing give no evidence of reform, or intended reform. Anomalies pointed out three years ago still continue. It has never been made clear why the excellent maps provided by the Great Western Railway and Southern Railway companies had to disappear in favour of the present ill-advised makeshift. Can it be that the good intentions of British Railways on assuming office have broken down under the strain of trying to reach an ideal which eluded their predecessors? — *From a letter to "The Times."*

### The Howth Tram

It is good to hear that the Great Northern Railway have once more "reprieved" the Howth tram, especially as this June will mark the fiftieth anniversary of the opening of the service.

The tram provides the nearest thing to a mountain scenic railway in Ireland and in the mind of Dubliners, of the older generation at least, it has sentimental associations as rich as the outside car to the Strawberry Beds held for their elders.

However the high finance of public transport may fluctuate in this island, it would be regrettable if, in an age of fast closed cars, fast closed trains, and fast

closed aeroplanes, the plain people were to be denied the pleasure of a "blow over the hill" on the top deck.—*"Quidnunc" in "The Irish Times."*

### "On Either Side" Guide in India

Parties proposing to proceed to Tanna with the train tomorrow had better take care that they are at Boree Bunder a little after three o'clock. It will take good half an hour to embark four hundred passengers in sixteen carriages and railway trains are like time and tide—they wait for no one. We have been unable to overtake our railway manual for this day's paper—we hope to have it in full tomorrow, and would recommend that no one should suffer the opportunity of enlightening himself on the objects to be seen to be lost—there will be no time or disposition to study on the way. — *From "The Times of India" of April 15, 1953.*

### Sleeping Car Celebrities

We favour the idea of putting in each sleeping compartment a list of the celebrities who occupied it during, say, the past six months. . . .

Sometimes one gets into a sleeper without having brought anything to read. This can be very distressing to habitual readers in bed. If one could lie back and read the names of one's better-known predecessors it would occupy the mind agreeably and, in fact, if one was a total train insomniac it would be rather consoling to read that "Lord X didn't sleep very well here." — *From "The Scotsman."*

### Spotters' Hey!

Behold them with their little books,  
All types and shapes and ages,  
Watching their precious trains go by  
And marking off their pages.

To them an engine-shed's a shrine,  
With awe they cross its portals  
And locomotive engineers  
Are ranked with the immortals.

Excitement mounts, they hold their  
breath,  
The tension is terrific  
As, Cortez-like, they gaze upon  
A shining, new "Pacific."

I cannot emulate their zeal,  
Or simulate their passion,  
Yet, in my own untutored way,  
I'm faithful in my fashion.

And, though my wheelbase knowledge  
is,  
Unfortunately, slender,  
It gives me satisfaction just  
To know which end is tender!

Yet, though my small son finds at  
times  
My frivolous ways revolting,  
He won't be missing when I see  
The "Titfield Thunderbolt"—ing.

A. B.

D 2



## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### INDIA

#### Deraillments on North Eastern Railway

Two persons were killed and forty injured when an Allahabad-Gorakhpur train was derailed on April 25 between Sarnath and Kadipore. Four relief trains were sent to the scene of the accident. The derailment occurred at a point where the track was being repaired and five coaches overturned. Subsequently four gangers were arrested. It is stated that bolts and nuts were found to be removed from the track near the site of the accident.

On April 29 the down Naini Tal express was derailed between Kichha and Baheri on the Kathgodam-Bareilly section. Three members of the engine crew, including the driver, were killed and ten passengers were injured. The engine, dining car and three other coaches overturned and seven coaches were derailed. According to reports the driver displayed outstanding courage and probably saved a number of lives by remaining on the footplate to the last. Tampering with the track is suspected.

### RHODESIA

#### Cinema Saloon

A saloon which will show films to railwaymen and their families stationed where there are no cinemas has been completed at Bulawayo workshops. The cinema part of the coach seats 24 persons. There are also a combined lounge and projection room, a bedroom, bathroom, darkroom, kitchen, toilet, and servants' quarters. Lighting is fluorescent. The coach could be attached, if required, to special tourist trains.

### SOUTH AFRICA

#### Non-European Clerks

As an experiment coloured clerks are being appointed at stations in districts where coloureds (persons of mixed origin) are in the majority, such as parts of Cape Province. They will issue tickets to non-European travellers only and will be supervised periodically by European officials.

#### Express Goods Service

On May 1 an express goods service, considerably faster than normal goods services, was introduced experimentally between Cape Town and Johannesburg. If it is a success, it is proposed to make the service permanent and to consider providing fast goods trains between other large cities.

It was expected that delivery of goods sent by this service would be made on the afternoon of the third day or the morning of the fourth day, after despatch, except Sundays and public holidays. Charges for the new service are

at the ordinary goods rate plus a surcharge varying from 25 per cent for high rated traffic, to 50 per cent for low rated traffic. Regular fast perishables and goods trains are already operating in both directions to expedite transport between Durban and the Rand. A special fast perishables train also runs from Durban to the Free State.

### THAILAND

#### Proposed Link with Cambodia

An agreement between Thailand and Cambodia signed recently in Bangkok provides for a metre-gauge link between the two countries. A metre-gauge line, originally privately owned, and opened in 1933, extends from Phnom Penh, the capital of Cambodia, north-westward via Battambang as far as Mongkolborey, a few miles from the Siamese frontier. The Siamese railhead is Arania, the terminus of a branch from Bangkok. These two lines were connected during the Japanese occupation in 1943, but the railway on the French side suffered heavy war damage. The report of the re-establishment of the Siam-Cambodia link does not specify which line is meant, but it is presumed to be the connection mentioned above. The line is to be opened in June.

### SYRIA

#### D.H.P. Railway Agreement

The Government has repurchased for £55,000,000 (about £815,660) the concession of the Chemin de Fer de Damas-Hamah et Prolongements relating to its lines within Syria. An agreement concluded last year between Syria and Lebanon covering the division of the system between the two countries has become operative. In the first place the agreement provided that each should work the part within its territory, supporting both the expenditure and the deficits.

### CANADA

#### Equalising Freight Rates

A major section of the freight rate equalisation programme of the Board of Transport Commissioners was disputed on April 16, and the board prepared to receive objections to another part of the plan. The Saskatchewan Government said that it opposed the proposal to remove at the end of this year an upper limit on rail charges on Prairie grain moving to Canadian markets. The board extended from April 15 to April 25 the last day for representations disputing equalisation proposals applying to the Maritimes and Newfoundland. The governments of these provinces were expected to file an appeal within that time. In both cases, information was that the question would go to the Supreme Court for

final rulings unless the provincial governments obtained favourable decisions from the board.

The rates for the Maritimes and on the grain traffic were involved in an order of the board on December 12 putting the basis for cross-country equalisation of rate levels in line with 1951 parliamentary legislation. The order is to go into effect on January 1 after possible revision following the tour of inquiry which the board is now making. In the order, the board served notice that it proposed to remove a 20-year restriction on rates for grain and grain products moving from the prairies to the head of the Lakes. The restriction is based on the low, statutory Crow's Nest Pass rates on export grain. The Crow's Nest Pass rates themselves would not be affected, nor would rates on the north-south movement of Prairie grain to the main rail line be changed as they were removed earlier from the board's restriction order.

The amount of extra revenue for the railways is not expected to be high, but increases up to more than 100 per cent in some traffic would be involved if general increases of the last few years were applied to it.

### UNITED STATES

#### New Marshalling Yard at Houston

The Southern Pacific is to spend \$7,000,000 on the modernisation and improvement of its Englewood yard at Houston, Texas. The new yard will cover 300 acres and its maximum width will be 76 tracks. There will be a 48-track classification yard, to hold 2,390 bogie wagons, and this will make possible the sorting of more than 4,000 wagons daily. There will also be eleven tracks for making through trains up, and ten further tracks for assembling local trains and terminal transfers. Equipment will include hump sorting, retarder speed control, pushbutton automatic switching, and short-wave walkie-talkie facilities with talk-back speakers; level crossings will be moved, to eliminate delays and traffic hazards, and subways will be provided for yard workers.

#### A New Station in Boston

The New York, New Haven & Hartford Railroad is planning to build a new station, at a cost of \$250,000, at Canton where its main line from Boston to New York crosses Massachusetts State Highway No. 128, 15 miles from Boston South Station. The road is a new circular route passing through all the southern suburbs of Boston, and the plan is to stop at the new station all the hourly expresses between Boston and New York. The plan includes a new car park large enough to accommodate 10,000 cars, and in view of the considerable saving in journey time to and from the south for residents on the south side of the city, compared with travelling

into and out of Boston South Station, the patronage of the new station is expected to be heavy.

Suburban trains between Boston, Mansfield, and Providence also will call at Canton, and so provide direct connection between a number of suburban trains and the expresses calling at Canton. Platforms of car level height will be provided, long enough to accommodate 18-car trains, and the station facilities may include a restaurant and a petrol filling depot. Construction is being begun immediately, on land owned by the New Haven, and the station will be opened this year. There is already a Canton Junction, at which very few trains stop, and this presumably will be displaced by the new Canton station.

## IRELAND

### C.I.E. Summer Timetable

The summer timetable of C.I.E., which will come into force about the end of June, will show faster and more frequent main-line services. The number of diesel units will be doubled and where they are used, train times will be reduced by 40 to 60 minutes.

The "Killarney Express" will leave from Westland Row instead of Kingsbridge, to facilitate the journey of cross-Channel passengers arriving at Dun Loaghaire. An extra train will

run from Cork to Dublin at 5.40 p.m. and this service will be worked by diesel units. A mid-day service is to be reintroduced on the Dublin-Waterford run. On the Midland section a new named train will go into service. It will be called the "Claddagh Express," and will provide a fast morning service from Westland Row to Galway and an evening service in the reverse direction.

The Dublin-Sligo services will be operated throughout by diesel trains, with reductions in running time. The suburban services on the Dublin & South-Eastern main line are to be dieselised and the running time of the morning and evening peak services will be reduced by forty minutes.

## NETHERLANDS

### Diesel Locomotive Orders

Orders placed recently by the Netherlands Railways for diesel-electric locomotives include 100 main-line freight Bo-Bo units to be built by Heemaf, Hengelo, under licence from the U.S.A. The electrical part will be made by Heemaf and the mechanical part by Allan of Rotterdam. Stork Limited, of Hengelo, will supply the 935-h.p., four-stroke, eight-cylinder diesel engine. The total weight in service will be 72 tonnes.

Alsthom will build 50 Bo-Bo freight locomotives weighing 60 tonnes; the engine will also develop 935 h.p. (con-

tinuous), but will have twelve cylinders. The English Electric Co. Ltd., is to manufacture 90 diesel-electric shunting locomotives, type C, powered by a two-stroke, four-cylinder, 400-h.p. engine. They are in addition to the ten units of the type supplied by the firm from 1949-50.

## HUNGARY

### New Station at Debrecen

A mothers' room, with bathroom adjoining for bathing infants, will be a feature of the new station being built at Debrecen. The station will also have a reading room, library, children's playroom, restaurant to seat 200, and hotel with 120 beds. Outwardly the station will harmonise with the Reformed Church and the College, which are both scheduled as national monuments.

### Quadrupling Main Line

Industrial development has made it necessary to quadruple the 40-mile section between Budafok-Háros in the south-western suburbs of Budapest, and Székesfehérvár. The 24 miles between Székesfehérvár and Martonvásár are completed. The work includes the extension of Székesfehérvár Station, where the line to Szombathely and Szentgotthard diverges from the main line from Budapest to Nagykanizsa, Ljubljana and Trieste.

## Publications Received

*Welding Technology.*—By F. Koenigsberger. Second Edition. London: Cleaver-Hume Press, Limited, 42a, South Audley Street, W.1. 8½ in. × 5½ in. 341 pp. Illustrated. Price 25s.—Welding in the engineering industry is becoming a subject of ever-increasing importance and the author deals with all aspects of the subject in a most comprehensive and practical manner. The most recent developments in this branch of engineering are included in such a manner as to be of the greatest use to engineers responsible for welding technique. Other matters covered include the maintenance of welding generators and allied equipment and electronic control. The illustrations include various types of welds, wiring diagrams, and many types of plant and equipment used. Tables show the gauge of electrodes for specified welds, voltage, and other relevant details.

*S.I.G. Centenary Volume.* Neuhausen am Rheinfall, Switzerland: Schweizerische Industrie Gesellschaft. 12¼ in. × 9½ in. 376 pp. Fully illustrated in colour and monochrome, with line drawings.—One hundred years' growth and development of the Schweizerische Industrie Gesellschaft are commemorated in this sumptuous publication. Dr. Heinrich Wachter, Chairman of S.I.G., contributes the introduction. The fifth chapter, by M. Oskar Welti, is devoted to the firm's general transport and rolling stock constructional

activities. Both old and new products are illustrated; the latter include diesel and electric railcars and train sets, standard passenger coaches, various types of freight vehicles, and mechanical freight handling equipment. Constructional details and processes also are shown in photographic illustrations and diagrams.

*Wrought Aluminium Alloys.*—Technical data relating to the Kynal and Kynalcore range of alloys made by the Metals Division of Imperial Chemical Industries Limited have recently been issued by the firm. The subjects include classification and complementary specifications, composition of alloys, applications and the physical properties of aluminium and its alloys in comparison with other metals.

*Industrial Cleansers and Equipment.*—A series of illustrated leaflets relating to Hughes P3 detergents and degreasing plants has been issued by Hughes P3 Detergents Limited. The cleansers are scientifically blended for use in transport and other undertakings for the removal of oil and grease deposits. The degreasing equipment is manufactured by Hughes Motors Limited, available in sizes varying from 2 ft. × 2 ft. 2 in. × 2 ft. up to 9 ft. × 3 ft. 2 in. × 3 ft. and is designed for gas, steam, or electrical operation; degreasing baskets are also available to suit each type. The equipment also includes a patented Venturi agitator which controls and directs turbulence. Some 14 different

models are manufactured with capacities up to units of machinery weighing 10 tons.

*French National Railways Fare and Distance Tables:* Tables of rail kilometre distances from Paris and from Channel ports to principal stations in France have been published by French Railways, Limited, 179, Piccadilly, London, W.1, also separate tables of single and tourist return fares, in sterling, for kilometre multiples of ten, to allow for fare alterations. Single fares work out at 3.4d. first, 2.5d. second, and 2d. a mile third class, whilst tourist fares afford considerable reduction over longer distances.

*Paints and Crayons for Temperature Testing.*—Details of the use of colour paints and crayons for ascertaining various temperatures of materials in the engineering and other industries are given in a series of leaflets issued by Allied Colloids (Bradford) Limited, 11, Great St. Thomas Apostle, Queen Street, London, E.C.4. The paints and crayons, known as Thermocolor and Thermochrom respectively, have a characteristic property of changing their colour when certain temperatures are exceeded. Since the changed colours normally do not recede on cooling, observations can be made at any period after the conclusion of the rise in temperature. The margin of error is claimed to be ±9°F. The paints are applied before the article is heated, while the crayons are applied after.





minimum delay during the limited period of the special possessions (11 a.m.—3.30 p.m. each day). On one day 30 half-mile runs were made in under 3 hr. testing time.

The test road was measured and marked for both directions to indicate shut-off points for runs with varying motoring and coasting distances, with further marks for location of braking points. A series of tests was made with varying motoring distances, shutting off and coasting at 1,000, 1,300, 1,600 and 1,900 ft., and making no-coasting runs, where the brake is applied as power is cut off, in both directions, each with three field strengths—100 per cent, 80 per cent, and 53.5 per cent, full field for the steel train, and 100 per cent, 84 per cent, and 56 per cent for the light alloy train.

A constant rate of braking was used on all tests with both trains. To obtain this, braking points were estimated for all the various runs, and the driver each time made a "full service" application of the E.P. brake with retardation control at the braking point, and then did not move the brake handle again during the stop. This called for skilful judgment of braking distances, but with practice it was possible to come to rest within plus or minus 10 ft. of the half-mile mark.

TABLE I  
Comparison of Similar No-Coasting Runs

Character- istic	No- coasting run time	Run- time with make-up	Energy per train	Total weights
Inter- mediate— Steel ...	76.1	80.1	7.20	148.2
Low speed— Alloy ...	—	80.1	6.31	127.0
Saving ...	—	—	0.89	21.2
Per cent	—	—	12.4	14.3

Spot checks of the train traction recorder voltage and current readings were made during the tests, and the speed readings were checked each day by timing runs at constant speed over  $\frac{1}{4}$ -mile sections. The total run-time was measured on the train by stopwatch, as was the current-on time, to check the speed of the clockwork-driven charts.

Before each run the train compressors and heaters were switched off, so that the only load measured by the substation was that used for traction, plus two motor-generators supplying 50 v. d.c. control current. The curves on page 562 show the results for the two trains operating on their low- and intermediate-speed characteristics, each point being the average of about six  $\frac{1}{4}$ -mile runs start to stop.

#### Deductions from Results

The results may be considered in several ways. First, the two curves which have the closest no-coasting (or minimum) run time, the intermediate characteristic for the steel train and the

low-speed characteristic for the light alloy train, are compared for the same total run-time based on the steel train with the usual allowance for make-up time. (Table 1).

This saving of 0.89 kWh. per train (0.22 kWh. per car) for the  $\frac{1}{4}$ -mile run gives a corresponding figure of approximately 0.25 kWh. per car, or a 12½ per cent saving, for a run of just over  $\frac{1}{4}$ -mile, the weighted average distance between stations for the whole of the District Line.



Aerial installed on light alloy train for communication with Northfields substation

The second comparison (Table 2) is for the two trains both running on their low-speed characteristic, i.e., at 100 per cent full field. The motors on both trains will have the same tractive effort/speed characteristic, after notching is complete, and the light alloy train with its lower mass would have a higher average and maximum speed. This is reflected in the following table by a reduction in no-coasting run-time with the light alloy train.

Two conditions are considered:—

1.—The same allowance for make-up time with both trains, so that part of the saving is in reduced run-time, and part in energy consumption.

2.—The same run-time for both trains, based on the run-time for the

TABLE 2  
Low-Speed Characteristics of Both Trains

Low-speed character- istic	No- coasting run time	Same make-up		Same run-time	
		Run time	Energy per train	Run time	Energy per train
Steel ...	Sec. 78.7	Sec. 82.7	kWh. 6.89	Sec. 82.7	kWh. 6.89
Light alloy	75.3	79.3	6.48	82.7	5.88
Saving	—	3.4	0.41	—	1.01
Per cent.	—	4.1	6.0	—	14.7

steel train, so that all the saving is in reduced energy consumption. Power is shut off earlier in the run for this case, with the faster train, to obtain equal run-times.

The general shape of the curves opposite illustrates the important principle that a large increase in energy consumption is required to produce a small saving in run-time, or conversely, and more important, how much energy can be saved by shutting off power early and coasting, with only a small increase in run-time. For the steel intermediate characteristic the energy consumption is reduced by 1.27 kWh. (13.2 per cent) and the run-time is increased by only 1.0 sec. if power is cut off after 1,600 ft. (point 3) compared with the no-coasting run.

The economies of light alloy, compared with steel, construction, can be used either to give the same run-time for a given distance with a lower energy consumption, or to have a shorter run-time with the same energy consumption, or to combine a smaller saving of both time and energy. The actual distribution will depend on the way in which the trains are driven, and the particular train characteristics provided.

In the case where all the saving is required in energy, it is clearly desirable to adjust the train characteristics so that the saving with the light alloy train will be assured however the train is operated. Some idea of the different effects of driving and of train characteristics is given in Table 3. With 1,600 ft. motoring (point 3) in all four cases the following values are obtained:—

TABLE 3  
Figures for 1,600 ft. Motoring

—	Low speed		Intermediate	
	Run time	Energy	Run time	Energy
Steel train ...	Sec. 80.0	kWh. 7.79	Sec. 77.1	kWh. 8.34
Alloy train ...	76.4	7.50	74.9	7.76
Saving ...	3.6	0.29	2.2	0.58
Per cent ...	4.5	3.7	2.9	7.0

Or comparing the intermediate steel with the low-speed alloy characteristic the figures are shown in Table 4.

TABLE 4  
Intermediate and Low-Speed Characteristics Compared

—	Run time	Energy
Intermediate—steel ...	Sec. 77.1	kWh. 8.34
Low-speed—alloy ...	76.4	7.50
Saving ...	0.7	0.84
Per cent ...	0.9	10.1

Results from the measurement of ampere-seconds from the current traces both in the substation and on the train confirm the above figures, which are all taken from the special kWh. meters in the substation.

## Multiple-Unit Trains in Brazil

*Three-coach sets supplied from Great Britain for the Estrada de Ferro Santos a Jundiai*

**I**NCLUDED in equipment for the electrification of the Estrada de Ferro Santos a Jundiai between Sao Paulo and Jundiai, carried out by the English Electric Export & Trading Co. Ltd. with the collaboration of British Insulated Callender's Cables Limited, were three 800-h.p. 3,000 V., d.c., three-coach trains. These units were originally intended for suburban services between Sao Paulo and Pirituba, but have actually been used for express services on the main line. They operate between Sao Paulo and Campinas, a distance of 65 miles, which can be covered in 82 min., including two intermediate stops. This run involves the use of the tracks of the Paulista Railway for 25 miles of the journey, between Jundiai and Campinas.

The introduction of the three-coach units was reported in our issue of February 13 this year. Articles on the locomotives, overhead equipment, and substations involved in this comprehensive electrification contract appeared in our issues of November 4, 1949, and February 20 last.

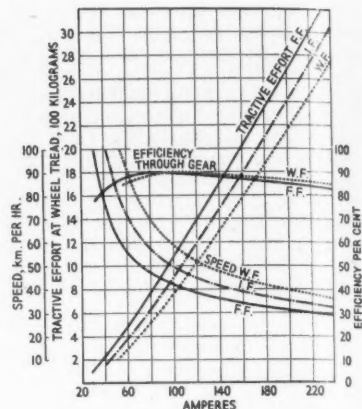
Additional fast passenger services worked by the new three-coach trains have been an important factor in the

Lightweight construction on the principle of the hollow beam structure is used. To facilitate manufacture the construction of the motor and trailer coaches was kept identical as far as possible. Each coach is provided with a small driving cab, the cab in the central motor coach being intended primarily for manœuvring purposes. Vestibule connections are fitted between the cars of a three-car unit but not between coupled trains. A lavatory and toilet are included in each trailer coach. The coaches are fitted with two pairs of electro-pneumatic sliding doors in each side. Electro-pneumatic train braking is provided.

### Electrical Equipment

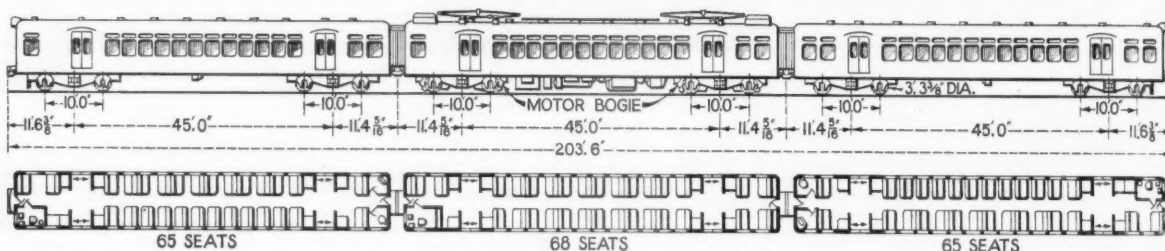
Most of the electrical equipment, including the contactor and relay cases, starting resistances, motor-generator set, battery, and air compressor is under-car mounted, thus allowing maximum seating capacity. The only part of the equipment mounted within the coach superstructure is that contained in the driver's cab.

The control equipment of each motor coach includes 19 electro-pneumatic



*Traction motor characteristics at 1,350 V.*

notches corresponding to the four positions of the main handle of the controller, progression between them being controlled automatically by current-limit relays. Transition from series to parallel is carried out by the "bridge" system, under control of the current-



*Dimensions of three-coach set and arrangement of seating in the two driving trailers and central motor coach*

recent considerable increase in passenger traffic on the E.F.S.J. main line.

Principal dimensions and data for the trains are as follow:—

Overall length of 3-coach unit	203 ft. 6 in. over couplers
Overall length of motor coach	67 ft. 10½ in. over couplers
Overall width ...	9 ft. 9 in.
Overall height (pantograph housed)	14 ft.
Bogie wheelbase ...	10 ft.
Wheel diameter ...	39½ in.
Gear ratio ...	74/21
Clearance above rail level with new wheels	4-8 in.
Tare weight of 3-coach unit ...	111-25 tons (electrical equipment 19-47 tons; mechanical parts 91-78 tons)
Tare weight of motor coach	50-35 tons (electrical equipment 18-45 tons; mechanical parts 31-90 tons)
Seating capacity of 3-coach unit	198 passengers
Mean accelerating tractive effort	18,000 lb.
1-hr. tractive effort (full field)	12,800 lb. at 23-4 m.p.h.
Continuous tractive effort (full field)	8,900 lb. at 26-6 m.p.h.
Maximum service speed ...	68 m.p.h.
Average acceleration on level track with all seats occupied	1-3 m.p.h.p.s., to 21 m.p.h.
Average retardation on level track	2 m.p.h.p.s. from 30 m.p.h.

contractors, 13 for resistance notching and six for transition and field control. The reverser is electro-pneumatic.

Power is collected from one of the two single-pan pantographs and fed through the main isolating switch and line breakers to the traction motors, starting resistance, and thence to earth. Series and parallel motor groupings are available, pairs of motors being permanently connected in series.

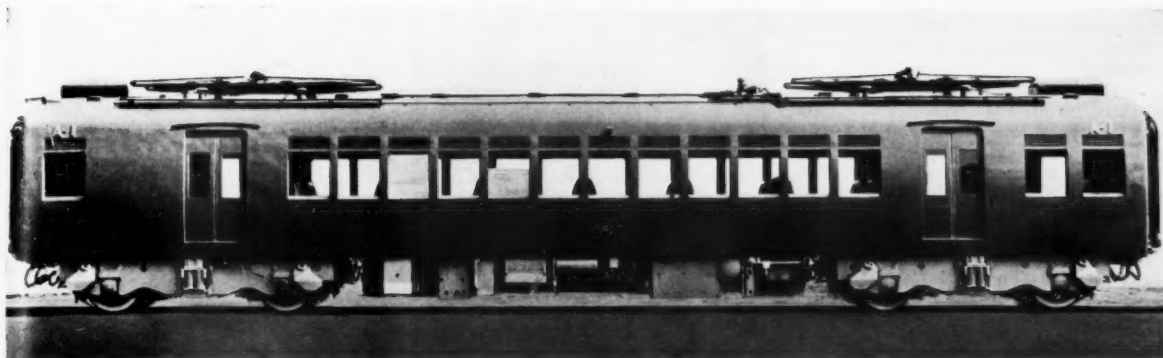
The master controller is fitted with mechanically interlocked main and reverse handles, the latter with Forward, Off, and Reverse positions, while the former has five positions, namely Off, First Series, Full Series, Full Parallel, and Weak Field. A deadman's handle is also fitted.

Eight notches are provided in the series motor grouping, four in the parallel grouping, and two field-tap notches. The field-tap notches come into operation only after all resistance has been cut out in the parallel grouping. The driver can select only the

limit relays, thus obviating interruption of tractive effort.

Knife-type motor cutout switches are provided to enable either pair of traction motors to be cut out of circuit; in each case the circuit is interlocked so that progression can only take place up to full series. Overload relays and a no-current relay are fitted. Many items of the control equipment have been made interchangeable with similar components on the 3,000-h.p. locomotives.

Contactors, relays, motor cutout switches, and high-voltage fuses are mounted in separate cases, each with safety interlocking. An air cock is fitted to the line breaker case to ensure that the pantograph, which is air-operated against spring pressure, is lowered before access can be obtained to the equipment housed inside. This cock is operated by the reverser key from the master controller. When the cock is in the Off position, access is given to a further key which enables the covers



*Motor coach with driving compartment for use primarily when shunting*

of the other equipment cases to be opened.

In addition to the two pantographs, roof-mounted equipment includes a lightning arrester, having a non-linear resistance characteristic, which, together with a 4-microfarad condenser, is connected between the overhead line and earth. A choke coil and pantograph isolators are connected in the main incoming lead from the pantograph to the equipment.

The starting resistances, mounted on the motor coach underframe, are of the alloy steel girder type. V.I.R. type cable is used throughout, run in steel rustproof conduit.

#### **Traction Motors and Auxiliaries**

Four series-wound, self-ventilated, axle-hung, nose-suspended traction motors drive each motor coach. The final drive from the motors to the road wheel axles is through solid spur gearing. The motors are fitted with wave-wound armatures with their shafts mounted on roller bearings. Their windings are insulated for 3,000 V. to earth, with mica and glass insulation. Axle suspension bearings are of the

sleeve type, fitted with removable axle caps. Each machine has an earth return carbon brush, bearing on the road wheel axle, to provide a direct path for the return current to the rails and to avoid passage of current through the roller bearings by the armature and axlebox. Motors are rated at 200 h.p. for one hour and 155 h.p. continuously, at 1,350 V., in accordance with B.S.S. 173, 1941.

A totally-enclosed motor generator set, mounted on the underframe, is supplied directly through a fuse from the 3,000-V. overhead line and provides a continuously rated output of 8.5 kW., 110 V., at 1,500 r.p.m. The generator supplies power for the air compressor, control equipment, door and brake equipment, battery charging, and lighting system. Both armatures are mounted on the same shaft, and a fan is provided to circulate air within the machine. A carbon pile voltage regulator maintains the low-tension voltage close to its nominal value of 110 V.

The Westinghouse air compressor is of the reciprocating type, fitted with an inbuilt motor, and has a capacity of 38 cu. ft. of free air per min. The air in-

take to the compressor is through a filter mounted under a seat within the coach. A 72-cell nickel-iron battery, with a capacity of 40 amp.-hr. at the 5 hr. rate of discharge, is housed in a sheet steel container mounted on the underframe. The emergency lighting system is supplied from this battery.

#### **Mechanical Design**

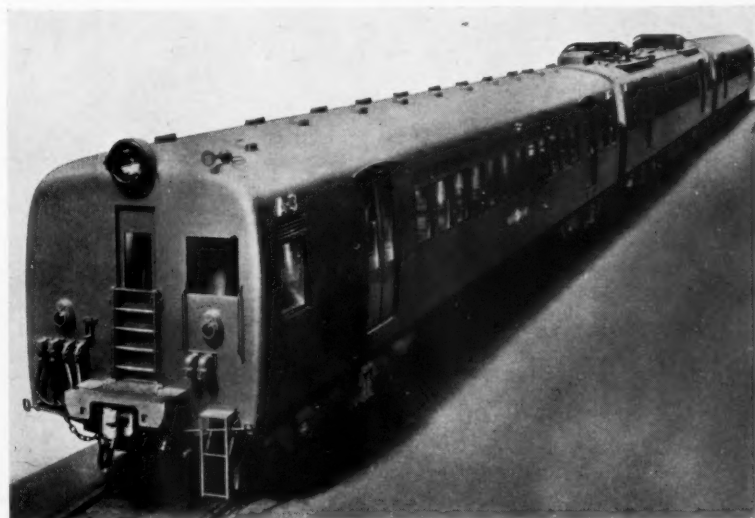
The mechanical parts and coachwork for the trains were built by the Birmingham Railway Carriage & Wagon Co. Ltd. The underframes are simply constructed from rolled steel sections and pressings welded together; additional stiffening members are provided in the motor coaches. Automatic central couplers with buffing and drawgear are fitted.

The superstructure is also of steel construction, the framework being generally of 16 s.w.g. pressings welded to 16 s.w.g. outer panelling. It is sectionalised and jig built, the various sections being finally welded together after erection on the underframes. The internal panelling consists generally of  $\frac{3}{8}$  in. plywood covered with fabric, but the partitions are made from 1 in. blockboard similarly covered.

The flooring is constructed from 18 s.w.g. galvanised dove-tailing sheet covered with cork inserts and overlaid with thick linoleum. Insulation against heat and sound is provided in the form of sprayed asbestos on the inside of the outer steel panelling and on the back of the timber inside panels.

The coaches are ventilated by means of roof and side window ventilators. These not only ventilate the car interior but also the interspace between the inner and outer panelling of the bodywork. Ventilating air for the traction motors is taken through settling chambers mounted on the roof and ducted downwards to the bogies. Cow-hide bellows connect the ducting to the traction motors.

The tubular-frame seating is sprung and upholstered in rattan with leather surrounds. The transverse seats are reversible. The drop windows are of armour-plate glass; light alloy venetian blind type louvres, with lazytong balancers, are also fitted. Telescopic gates are used to form the sides of a



*Three-coach set with motor coach marshalled between the trailers from which the train is normally driven*



passageway between one train and another when working in multiple-unit formation.

In the motor coach cab, the driver is seated on an adjustable chair within easy reach of his controls. A pneumatically-operated windscreen wiper is fitted. Behind the driving position is a cupboard, in the top half of which, within easy reach of the driver, is the low-voltage panel on which are mounted the voltage regulator, fuses, and switches. The bottom portion of the cupboard accommodates items such as the pantograph hand pump, control cutout switch, and the handbrake bevel gearing, the whole layout being compact and neat in appearance. The driving trailers are similarly equipped, except that a smaller low-voltage panel, mounting fuses and switches only, is used.

#### Bogie Construction

The bogies of the motor and trailer cars are structurally identical and interchangeable so that a bogie can be taken from a trailer car and quickly converted into a motor bogie should the necessity arise. They are made from jig-built, all welded and stress-relieved sub-assemblies, riveted together, which comprise the solebars, headstocks, transom, bolster, and springplank.

The solebars are of  $\frac{3}{8}$  in. plate forming what is virtually a box-shape member. Inside stiffeners are fitted to give rigidity to the side plates. Mild steel plates are welded to the solebars at the wheel openings and form a base for the manganese liners at the horn guides, which work in conjunction with similar liners on the axleboxes. The keeps at the bottom of the wheel openings are fitted and then bolted in position. Conical stiffening pieces are provided above the wheel openings in order to stiffen the solebars at the point of maximum stress.

The headstocks are also of box section and carry the necessary plates for attachment to the solebars. The transoms are of fabricated construction and carry the traction motor nose suspension brackets. They are fitted in line with the swing link hangers, which are on the outside of the solebars. The bolsters, of box formation, comprise a pressed upper plate and a shaped lower plate welded together.

The weight of each superstructure is transferred through the bogie centre pivots to swing bolsters, each end of which rests on a nest of helical springs carried on the spring plank. The spring plank is carried by swing links attached to the outside of the solebars.

Transfer of the superstructure weight from the bogie frame to the axleboxes is through laminated springs mounted over each axlebox and fitted with auxiliary coil springs. The driving thrust from the bogie frame to the bolster, and thus to the superstructure, is taken through steel pads welded to the bolster and solebars. Manganese steel liners are fitted at this point. A rubber spring stabiliser is fitted to the bolster to damp out trans-



*Arrangement of controls in driving cab*

verse oscillations. The bogie centre pivots are of cast steel.

Timken roller bearing axleboxes of uniform size are fitted to all bogies. A Hasler speedometer is operated by a telescopic drive from one axlebox on the leading bogie of each coach.

#### Brake and Sanding Equipment

Self-lapping Westinghouse electro-pneumatic brakes are fitted. A single brake cylinder is mounted on each car and actuates the brake rigging through an automatic slack adjuster. The brake rigging is of the conventional type with an overall leverage of 5.66 to 1 and has vertical levers and horizontal pull rods in pairs, one passing each side of the wheel in order to give a straight-line pull. These rods are connected together

across the bogie by means of a shaped equalising cross beam of constant stress section.

Brake blocks are of cast iron and the shoes of cast steel. All brake pins are fitted with grease nipples and are of case-hardened steel. All levers have pin holes fitted with hardened steel bushes.

The main reservoir pressure is 100 lb. per sq. in., with a brake cylinder air pressure of  $52\frac{1}{2}$  lb. per sq. in., which corresponds to brake pressures of 95 per cent and 85 per cent respectively of the tare weights of the motor and trailer coaches. A handbrake operated from the driver's cab acts on all wheels of the vehicle concerned.

Electro-pneumatic sanding equipment is provided, supplying sand to the leading wheels of each bogie of the motor coach for both directions of motion.

#### Sliding Door Installation

Two pairs of sliding doors are located in each coach side. These are operated by door engines, air pressure being obtained from the main reservoir system. The electrical circuit for operating the doors is under the control of the driver, who can control all the doors on each side of the train. The door equipment was supplied by G. D. Peters & Co. Ltd.

Key-operated switches, under the control of the guard, are fitted over each doorway and operate a buzzer in the driver's cab, thus indicating that the latter can close the doors. To assist station staff, each car of a train is fitted with exterior door signal lights, thus facilitating detection of doors which fail to close. These lights are particularly useful when trains of six or nine cars are being operated. In case of emergency,

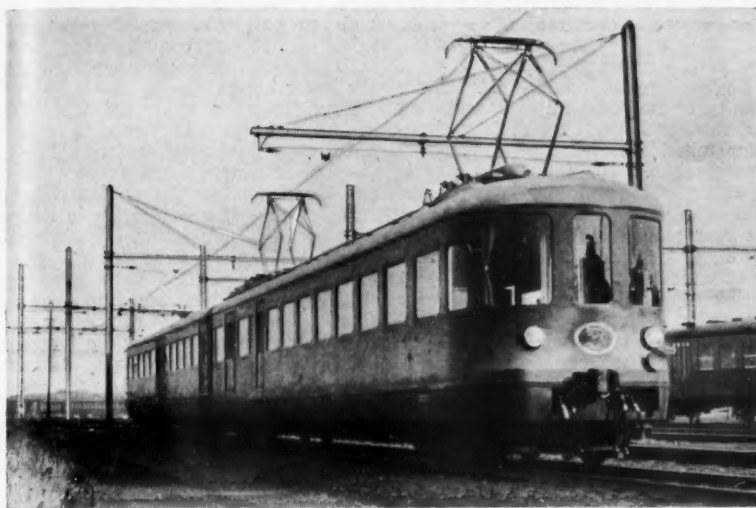
*(Concluded on page 567)*



*Passenger accommodation in one of the coaches showing reversible transverse seating and enclosed rectangular lighting fittings*

## Belgian Two-Car High-Speed Electric Train

*Prototype unit embodying improvements in suspension and passenger amenities*



*The new S.N.C.B. two-car high-speed unit in service*

**A** PROTOTYPE two-car high-speed electric train, designed by S.N.C.B. staff, was recently placed in service on the Belgian National Railways. The total length over buffers (both vehicles) is 151 ft. and total weight 78 tonnes. Vehicles are close-coupled. Accommodation is provided for 42 second and 119 third class passengers, with a kitchen for meal service to passengers in their seats, baggage space, and compartment for electrical apparatus. Passenger accommodation is arranged to give maximum visibility by means of large side windows, windows in front and rear, and glazed partitions, which last have been kept to the minimum.

Sustained speeds are maintained at 88 m.p.h. Special attention therefore has been paid to suspension and springing. Recent progress in the design of lightweight vehicles and the use in the body, underframes, and bogies of special steel, aluminium alloys, and other light materials, as well as widespread use of welding in construction, helped to reduce the weight. As a comparison, the S.N.C.B. two-coach trains placed in service in 1950 weigh 93 tonnes.

Third class seats are sprung and upholstered, with padded backs. Folding tables are affixed to the sides, facilitating service of refreshments whilst giving passengers maximum mobility. Baggage racks are arranged longitudinally, so as to give uninterrupted views through the windows, and additional space is provided for small articles.

Ventilation is by a duct running the length of the vehicle between the roof and ceiling. Intake of air is at the front; after dust is removed by a filter, air is distributed through outlets in the

ceiling arranged to afford a supply of fresh air to all parts of the interior. Provision of forced ventilation, to supplement ventilation whilst the train is not in motion, is under consideration.

Side windows in the second and third class bays are equipped with grooved shutters. Curtains are provided only for the windows at the ends of the train, where the curvature precludes shutters. To increase insulation against sound and extremes of temperature, the floor is of  $\frac{3}{4}$  in. multiplex construction, with a rubber covering  $\frac{1}{8}$  in. thick. Lighting is by fluorescent tubes operating at 72 V.; to improve the appearance of the interior and to give lighting of uniform intensity and without shadow, the tubes are placed longitudinally on each side of the ventilation duct.

### Electrical Equipment

Each of the four nose-suspended motors, mounted one in each bogie, develops 265 h.p. at the one-hour rating. They can be connected in series or in series-parallel. The drive is transmitted through solid pinions and gearwheels from one end of the motor shafts. Like existing sets of motor coach stock, the new prototype two-car set can be incorporated into longer trains and operated by multiple unit control from the leading cab.

The contactors are operated by a camshaft driven by an electric servomotor on the Jeumont-Heidman system. Notching is automatic and is regulated by an accelerating relay. The high-tension and low-tension equipment is housed partly in cases under the vehicle and partly in an apparatus compartment.

Heating is provided by 3,000 V. radiators arranged along the vehicle walls and under the seats. It is automatically controlled by the thermostats in the compartments. The Calrod type heating elements consist of a spiral winding of resistance wire inside a metal tube, and are surrounded by magnesium cement. These heaters are mounted on Steatite insulators and are concealed behind decorative grilles. The total power consumed by the heating in each vehicle is 30 kW.

Direct current fluorescent lighting similar to that in the 25 motor coaches of the 1950 series has been installed. All the lamps are controlled from a lighting cabinet in which a time delay relay acts as a starter.

### Multiple-Unit Trains in Brazil

*(Concluded from page 566)*

one door on each side of each coach can be opened manually by means of a lever attached to the corresponding door engine. All the door engines are mounted under the longitudinal seats, which are hinged and made to lift upwards for inspection and maintenance purposes.

The main saloons are fitted with lighting fittings of a neat rectangular pattern recessed into the ceiling, each housing one 40-watt bulb. One-third of the lighting system can be supplied from the battery in an emergency. A headlight and two tail lights are mounted at the leading end of each driving trailer. The lighting equipment was supplied by J. Stone & Co. Ltd.

Each driving cab is fitted with a ceiling light. Pygmy lamps are used to provide indirect illumination of the instrument and speedometer dials.

**TRACTION BATTERY IMPROVEMENTS.**—Important developments in the design and construction of Exide-Ironclad traction batteries for electric industrial trucks, locomotives, and road delivery vehicles are announced by Chloride Batteries Limited. Wood veneer separators have been replaced by Porvic, the new microporous chemically inert material. This forms a continuous diaphragm between the positive and negative plates and has proved in service to be virtually indestructible even under the most arduous working conditions. Being over 80 per cent porous, the separators enable the cells to deliver heavy rates of discharge with minimum voltage drop. A further advantage is that new Exide-Ironclad batteries can now be stored without risk of deterioration for an indefinite period before filling in. At the same time improvements have been made in the antimonial lead alloys used for the plate grids in these batteries. The alloys are highly resistant to corrosion in service and will help to ensure maximum life for the batteries.

## South African Railways "25NC" Class Locomotives

*Freight-traffic 4-8-4 type locomotives with a tractive effort of 43,800 lb. at 75 per cent boiler pressure*

**R**EFERENCE was made in our November 30, 1951, issue to a contract placed with Henschel & Sohn G.m.b.H. and the North British Locomotive Co. Ltd. by the South African Railways administration for a number of condensing and conventional type steam locomotives of 4-8-4 design. Of the 40 engines of conventional design being built by Henschel & Sohn, one will be fitted with Henschel condensing equipment, and will be used as a prototype for the condensing locomotives being built by the North British Locomotive Co. Ltd., incorporating Henschel condensing equipment.

The 40 locomotives are being built to the design and specification of the Chief Mechanical Engineer, South African Railways, and the drawing work was carried out in collaboration between both firms concerned, and under the supervision of the Advisory Engineer, High Commissioner's Office, London.

The engines are designed for a maximum speed of 55 m.p.h. and to negotiate curves of 275 ft. radius.

### Design Features

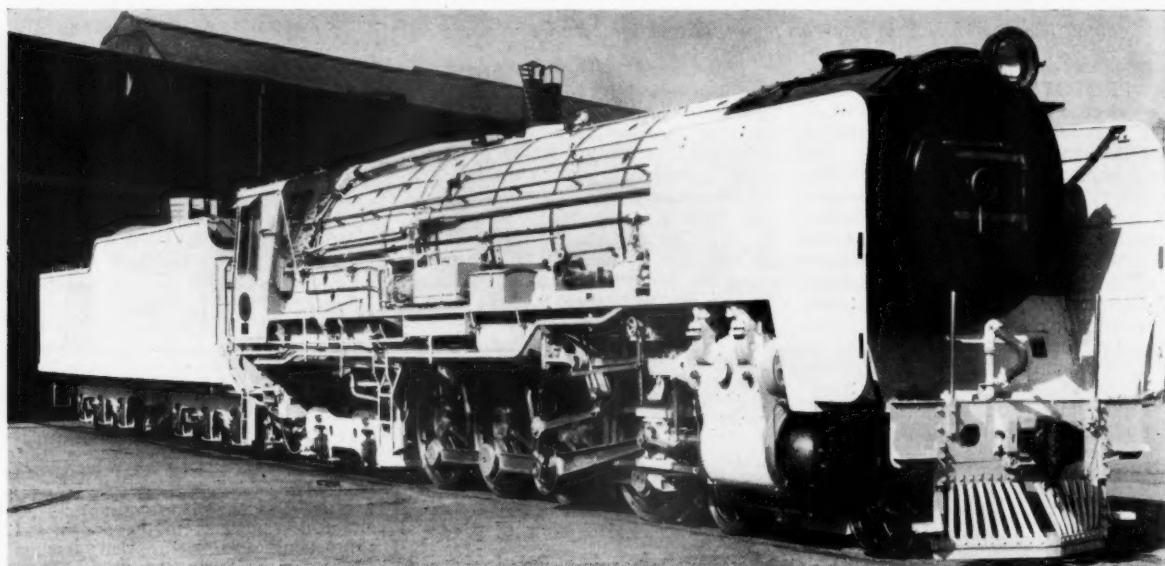
The boiler has an all-welded inner and outer firebox with a combustion chamber, and is fitted with four circulator tubes, which are welded to the inner firebox. The foundation ring is of channel section made from pressed steel plates, to which are butt-welded the inner and outer firebox. The boiler barrel, which is of riveted construction and conventional design, is of 6 ft. 4½ in. outside diameter and 19 ft. between tubeplates. Smokebox and firebox tubeplates are ¾ in. and ½ in. thick respectively. The smokebox is self-cleaning and deflector plates are fitted.

Rigid and flexible stays are fitted, and a 6 in. space between the inner firebox and wrapper provides ample water space; no cross stays are fitted. The

multiple-valve header is of the Melesco type. Two steam turrets are provided and are positioned on the right and left-hand on the firebox crown; separate main shut-off valves are arranged on the boiler barrel.

Four Ross pop safety valves, 2½ in. dia., are fitted, and two Hopkinson boiler blowdown cocks are arranged on the firebox wrapper, one on each side. Other boiler fittings include two Friedmann vertical type non-lifting injectors each of 5,200 gal. per hr. capacity. A standard HT mechanical stoker is provided together with a steam-operated rocking grate; a separate drop grate is fitted. A single hopper ashpan permits lateral air admission below the foundation ring, and discharge is by bottom sliding door.

The locomotive bed consists of a one-piece steel casting which includes cylinders and smokebox saddle, and was designed and supplied by the Common-



South African Railways "25NC" class locomotive designed for freight traffic operating, now being constructed by Henschel & Sohn

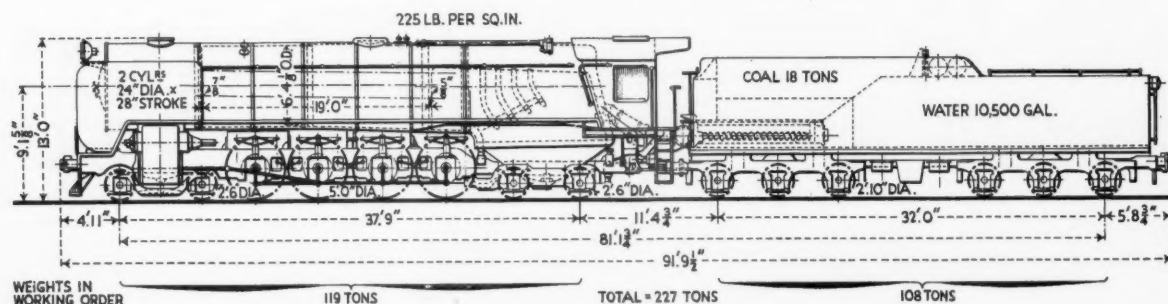


Diagram showing principal weights and dimensions of the locomotive





*The first locomotive under test at the maker's works*

wealth Steel Castings Corporation, U.S.A. The cylinders are fitted with cast-iron liners and are 24 in. dia. by 28 in. stroke. Koppers segment piston rings are fitted to the pistons and piston valves. Wakefield mechanical lubricators are provided. The piston valves are actuated by Walschaerts valve gears and Hadfields steam reversing equipment is provided. The split type crossheads are of the Alligator type and the gudgeon pins are fitted with American Timken roller bearings. The piston rods, connected to the crossheads by multiple grip, have Paxton-Mitchell metal stuffing boxes.

Engine coupled axleboxes are of

cannon type with British Timken roller bearings, and the frames are fitted with Franklin automatic self-adjusting wedges.

Overhead bearing springs are provided and the engine is fully compensated. British Timken roller bearings are fitted to the connecting and coupling rods. British Timken roller-bearing axleboxes are also fitted to the four-wheel engine bogie and trailing truck, which have cast-steel frames of Commonwealth design.

The tender is of welded construction, incorporating a Commonwealth cast steel water bottom frame, and has capacity for 18 tons of coal, and approxi-

mately 10,500 gal. of water, and weighs 108 tons in working order.

Commonwealth cast-steel bogies are provided and the axles have British Timken roller-bearing axleboxes. Spring suspension is by double helical springs with Symington-Gould snubbers to assist the riding qualities.

#### Cab Accommodation

A very roomy cab is provided and is fitted with bucket type seats, fully adjustable and upholstered with Dunlopillo sponge rubber. Vacuum braking is provided for the engine, tender, and train, and the equipment provided includes train steam heating, a Smith-Stone electric speedometer, and electric lighting equipment supplied by J. Stone & Co. (Deptford) Ltd.

Alliance type automatic couplers are provided and a cowcatcher is fitted at the front of the engine. The leading particulars of the locomotives are as follow:—

Gauge	...	3 ft. 6 in.
Cylinders (2), dia. and stroke	...	24 in. x 28 in.
Coupled wheels, dia.	...	5 ft.
Bogie wheels, dia.	...	2 ft. 6 in.
Trailing truck wheels, dia.	...	2 ft. 6 in.
Rigid wheelbase	...	15 ft. 9 in.
Total wheelbase	...	38 ft.
Boiler pressure	...	225 lb. per sq. in.
Grate area	...	70 sq. ft.
Heating surface:—		
Total evaporative	...	3,390 sq. ft.
Superheater	...	600 sq. ft.
Total	...	3,990 sq. ft.
Weight in working order	...	119 tons
Adhesive weight	...	75 tons
Axleload	...	18 tons 15 cwt.
Tender:—		
Wheels, dia.	...	2 ft. 10 in.
Bogie wheelbase	...	10 ft.
Total wheelbase	...	31 ft. 3 in.
Water capacity	...	10,500 gal.
Coal capacity	...	18 tons
Weight in working order	...	108 tons
Total wheelbase, engine and tender	...	81 ft. 1½ in.
Weight of engine and tender in working order	...	227 ton
Tractive effort at 75 per cent boiler pressure	...	43,800 lb.

## Mechanical Handling Demonstration at Ipswich Goods Yard

*(See news article in last week's issue)*



*Left: Rapier fork lift truck unloading a stack of timber from a high side wagon; and right: A loaded container being off-loaded by the Rapier fork lift truck. For this lift the cantilever jib has been removed*

# Indian Railways Centenary Exhibition

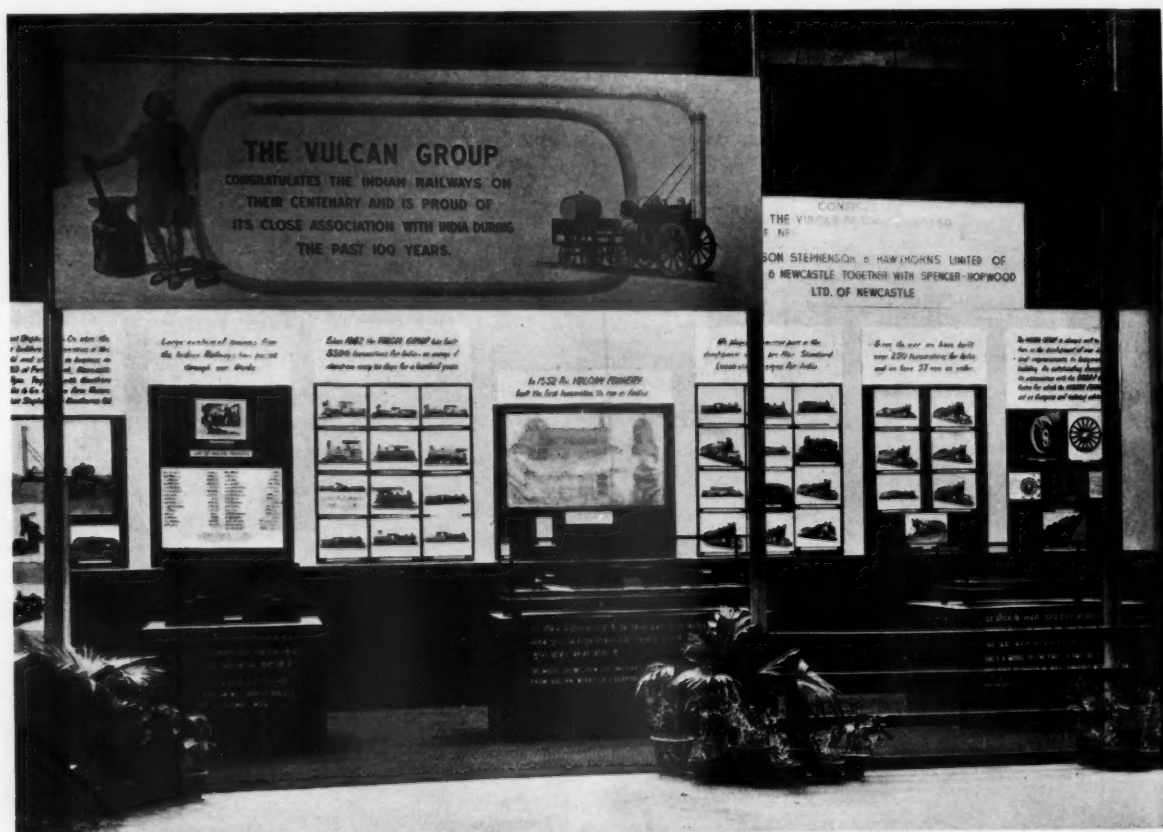
(See editorial note on page 554)



Mr. Nehru, Prime Minister of India, inspecting a sectioned London Transport aluminium alloy coach on the stand of the Metropolitan-Cammell Carriage & Wagon Co. Ltd. Mr. Lal Bahadur Shastri, Minister of Railways, is in the background



Mr. F. C. Badhwar, Chairman, Indian Railway Board (in foreground), accompanied by Mr. R. Ogle, Metropolitan-Cammell representative, inspecting a model of the Sovereign's coach for the South African Royal Train, with Dr. S. Radhakrishnan, Vice-President of India (centre), and Mr. Shastri (right)



The Vulcan Group stand at the exhibition, representing the activities of the Vulcan Foundry Limited, Robert Stephenson & Hawthorns Limited, and Spencer-Hopwood Limited. The Vulcan Foundry Limited supplied the eight 2-4-0 locomotives with which services on the Bombay-Thana line were inaugurated in 1853

## RAILWAY NEWS SECTION

### PERSONAL

Mr. John Elliot, Chairman of the Railway Executive, has been elected President of the Institute of Transport from 1953 to 1954. He will take office on October 1.

Mr. John Alcock, Chairman & Managing Director of the Hunslet Engine Co. Ltd., Leeds, has been elected President of the Locomotive Manufacturers Association

make of diesel-mechanical locomotive, have been due largely to Mr. Alcock. In 1940 he became Technical & Works Director of the Hunslet company, and in 1944 Joint Managing Director while still retaining his technical responsibilities. In 1947 he was appointed Chairman of the then newly-formed Internal-Combustion Group of the Locomotive Manufacturers' Association and held that office for three years. Since May, 1949, he has been a

ford had become a District Officer, and, in the same year, he was placed on special duty to co-ordinate the goods rating systems of the Indian railways. He was given the rank of Joint Director (Post War Rating), Railway Board. The work, which included unification of fares and general rules relating to rates and fares, was completed early in 1948, when Mr. Crawford took over as Director (Traffic) Railway Board after all the railways had been



*Mr. John Alcock*

President, Locomotive Manufacturers Association of Great Britain



*Mr. K. L. Crawford*

Chief Commercial Superintendent, Southern Railway, India, who is retiring

tion as from the end of April. Educated at Oundle and Clare College, Cambridge, where he took an Honours Degree in the Mechanical Sciences Tripos, he joined the Hunslet Engine Co. Ltd. in 1927. He took a leading part in the introduction of diesel-mechanical locomotives into the company's production in 1931-32, and was personally responsible for the four diesel-mechanical locomotives which initiated the diesel shunter programme of the L.M.S.R. in 1932-33. In 1932 he was appointed Technical Director of the company, and in that capacity not only carried full responsibility for diesel locomotive development but also originated the development of the flameproof mines diesel locomotive. Though the first Hunslet locomotive of this type was not the first to get the "Buxton certificate," it was the first to take up regular working underground, and in the 13½ years since August, 1939, has covered 150,000 miles below the surface. The Hunslet gear drive for diesel locomotives, and the ever-increasing power range of that

member of the Policy Committee of the L.M.A. On the death of Mr. Edgar Alcock in March, 1951, Mr. John Alcock became Chairman & Managing Director of the Hunslet company. He is a Member of Council of the Institution of Locomotive Engineers, and a member of the Institution of Mechanical Engineers.

Mr. Kenneth Lennox Crawford, who proceeded on leave preparatory to retirement from the post of Chief Commercial Superintendent, Southern Railway, India, on August 6, 1952, was born on August 18, 1903. At the age of 16, he joined the service of the old East Indian Railway Company in May, 1920, as an apprentice. In 1927 the Railway Board sent Mr. Crawford to the London School of Economics (Transport Section), where he was awarded the Brunel Medal for that year. He returned to India in May, 1929, and transferred from the East Indian Railway to the Madras & Southern Mahratta Railway at Madras. By 1945 Mr. Craw-

ford had become a District Officer, and, in the same year, he was placed on special duty to co-ordinate the goods rating systems of the Indian railways. He was given the rank of Joint Director (Post War Rating), Railway Board. The work, which included unification of fares and general rules relating to rates and fares, was completed early in 1948, when Mr. Crawford took over as Director (Traffic) Railway Board after all the railways had been

### American Railway Engineering Association

At the 52nd annual convention of the American Railway Engineering Association in Chicago, Mr. C. G. Grove, Chief Engineer, Western Division, Pennsylvania Railroad, has been elected President of the association for the forthcoming year.

Mr. G. W. Miller, Engineer, Maintenance-of-Way, Canadian Pacific Railway, becomes Senior Vice-President; the Senior Vice-President normally is elected President in the subsequent year.

Mr. G. M. O'Rourke, Assistant Engineer, Maintenance-of-Way, Illinois Central Railroad, was elected Junior Vice-President.



Mr. Mahendra Kishan Kaul, Senior Deputy General Manager, Northern Railway, India, was born in 1905 and educated at the Government College, Lahore. After graduating, Mr. Kaul gained experience with the Tata Iron & Steel Co. Ltd., Jamshedpur, and the Scindia Steam Navigation Co. Ltd., Bombay. He joined the Bombay, Baroda & Central India Railway as an Assistant Superintendent of Stores in February, 1927. He was posted to the newly-constructed locomotive workshops at Dohad, and, in the same year, he officiated as Superintendent of Stores at Ajmer and

to August, 1949; and Controller of Stores, Bengal Nagpur Railway from 1949 to 1952. He was appointed Officer on Special Duty (Regrouping), Northern Railway, in April, 1952, and became Senior Deputy General Manager from July 26, 1952. On behalf of the Northern Railway, Mr. Kaul was actively associated with the administration of the Indian Railways Centenary Exhibition.

We regret to record the death on May 7, at the age of 81, of Mr. P. E. Culverhouse, Architect to the Great Western

We regret to record the death on May 3, at the age of 72, of Mr. Fannin Charske, Chairman of the Executive Committee of the Union Pacific Railroad Company since 1932. Mr. Charske worked under the late Mr. E. H. Harriman during the re-building of the Union Pacific from 1898 until early in this century. He began his railway career in 1901 as an Auditing Clerk in the Houston (Tex.) office of the Southern Pacific a month before the road was taken over by the Union Pacific Railroad Company. In 1918 Mr. Charske went to New York as Assistant to the President of the



*Mr. M. K. Kaul*  
Senior Deputy General Manager,  
Northern Railway, India



*The late Mr. P. E. Culverhouse*  
Architect, Great Western Railway,  
1929-45

also, in 1935, at Bombay. From 1938, he again officiated as Superintendent of Stores at Ajmer, in which position he was confirmed in 1939. Mr. Kaul was nominated a member of the superseded Municipal Committee of Ajmer on behalf of the railway electorate in 1938, and was elected Chairman of the reconstituted elected Municipal Committee, Ajmer, in 1939. He organised the Ajmer railway grainshops and was appointed as an Officer on Special Duty for the grain procurement for the B.B. & C.I.R. from the Punjab and the Punjab States during the scarcity period, and was appointed Controller of Railway Grainshops, Northern Zone, at Ajmer, 1942-43. He became Deputy Controller of Stores, B.B. & C.I.R., Bombay, in 1944, and was confirmed in that post in 1946. He officiated as Controller of Stores, B.B. & C.I.R. from May to October, 1946, and again in 1947-48. He was Deputy General Manager, Grainshops, from September, 1948, to April, 1949; Deputy General Manager (Staff), B.B. & C.I.R. from April

Railway Company, 1929-45. Mr. Culverhouse, who retired on September 30, 1945, was educated at Wellington School, Somerset, and was articled to Windsor architects, during which time he had practical experience in planning and construction details of high-class residences. He joined the G.W.R. in 1892 on the personal staff of Sir James Inglis, then Chief Engineer, and was engaged on various station alterations on account of the conversion of the gauge. He became Architectural Assistant to the Chief Engineer (Mr. W. W. Grierson) in 1917, and was appointed Architect to the company in 1929. Mr. Culverhouse was responsible for the design and erection, among others, of the following stations:—Exeter, Cardiff, Bristol, Plymouth, Aberystwyth, Taunton, Newport, and Leamington; and for the design and erection of many large buildings, such as blocks of offices at Paddington, and accommodation for the Chief Goods Manager (chiefly goods depots) at South Lambeth, Park Royal, and Cardiff.

Union Pacific, and subsequently became Controller, Vice-President, Vice-Chairman of the Executive Committee, and Chairman.

We regret to record the death, at the age of 63, of Mr. R. H. Chapman, Commissioner of the South Australian Government Railways. Mr. Chapman was born in South Australia in 1890, and was educated at St. Peter's College, Adelaide, and the Adelaide University, graduating in 1910. After twelve months mining and general engineering experience, he joined the Railway Construction Department, New South Wales, in 1911, as a Draughtsman. He was appointed Assistant Engineer on the North Coast Railway in 1913, and, in 1915, enlisted for service with the Australian Imperial Forces. He spent six months in England after the 1914-18 war, visiting various engineering works. On his return to Australia he rejoined the New South Wales Railways, and, after about two years as Assistant Engineer and Act-

ing Resident Engineer, resigned to take a position as Lecturer in Civil Engineering at the Sydney University. In September, 1923, he was appointed Assistant Engineer in connection with the construction of the new Murray Bridge, South Australian Railways, and in February, 1924, he was appointed Acting Chief Engineer for the South Australian Railways, becoming, in July, 1924, Chief Engineer. He was appointed Chief Engineer in 1925 and became Railways Commissioner of the State in 1947. Mr. Chapman was a Master of Engineering (Adelaide); and an Associate Member of the Institution of Civil Engineers. He held a commission as Honorary Lieutenant-Colonel in the Engineer and Railway Staff Corps.

Mr. Gilbert L. Holt has been appointed Works Manager of the Berwick (Pa.) Plant of American Car & Foundry Company.

Mr. F. A. Johnson, Chief of Passenger Bureau, Canadian National Railways, is retiring next month.

Mr. J. R. Burns has been appointed Transport Research Assistant for the Canadian National Railways.

Mr. C. J. Holland-Martin has been elected a Director of Central Africa Railway & Nyasaland Railways.

It is announced by the Colonial Office that Mr. A. Jessop, Assistant (Outdoor) to the Commercial Superintendent, London Midland Region, British Railways, has been appointed Transport Adviser to the Government of Mauritius.

Dr. Leslie Martin, M.A., Ph.D., F.R.I.B.A., who was Principal Assistant to Mr. W. H. Hamlyn, Architect, London Midland Region, British Railways, 1939-48, has been appointed Chief Architect to the London County Council.

Mr. Frank Lockwood, London Cartage Manager, Eastern Region, Kings Cross, British Railways, has retired after 50 years service.

Mr. G. S. Dedman, Assistant Goods Agent, Newcastle North, British Railways, North Eastern Region, has been appointed Goods Agent, West Hartlepool.

Mr. T. S. Gambrill, Deputy Staff Assistant, Southern Region, British Railways, has been appointed Staff Assistant to Superintendent of Operation, *vice* Mr. R. McPherson, whose death was recorded in our March 13 issue.

We regret to record the death, on May 11, of Mr. H. Shufflebotham, District Goods Superintendent, Warrington, London Midland Region, British Railways. Mr. Shufflebotham began his railway career with the London & North Western Railway in 1905, and served in the 1914-18 war with the Lincoln Infantry and Machine-Gun Corps. On demobilisation he joined the District Goods Manager's staff at Crewe, and, after a period of relief duties, became Chief Clerk at Sandbach. Subsequently, as Overseas & Continental Representative, he joined the Staff of the District Office at Warrington in August, 1928, and after various phases of departmental supervision became Commercial Assistant in 1941. He was appointed Assistant District Goods Superintendent, Warrington, in 1945. Mr. Shufflebotham controlled a railway goods area of approximately 1,300 square miles, extending from

Bay Horse in the north to Sandbach in the south, and from Formby on the west coast of Lancashire to Leigh in the east. A portrait of Mr. Shufflebotham was reproduced in our September 26 issue. The funeral took place on May 13 at Stretton Parish Church, nr. Warrington.

The following staff changes are announced by the British Railways, London Midland Region:—

Mr. C. H. W. Barnes, Surveyor, Preston, to be Assistant District Estates Surveyor, Preston.

Mr. H. Taylor, Station Master/Goods Agent, Tyldesley, to be Station Master, Oldham (Mumps), *i/c* Central and Werneth.

Mr. H. T. Davies, Assistant Yard Master, Aintree S.S., to be Station Master, Fleetwood, *i/c* Wyre Dock.

Mr. A. E. Nightingale, Passenger Agent, Coventry, to be Passenger Agent, Birmingham (New Street).

Mr. F. A. Roseveare, Goods Agent, Kendal, to be Goods Agent, Barrow.

Mr. E. Gay, Goods Agent, Guide Bridge, to be Goods Agent, Ashton.

Mr. F. W. P. Hampton, B.Comm.Sc., M.Inst.T., Chief Assistant to the Belfast Harbour Commissioners, has been appointed General Manager and Secretary to the Board.

Mr. A. Proctor, M.B.E., Manager, Engineering Division, and Mr. D. E. F. Canney, Development Manager, have been appointed Directors of George Angus & Co. Ltd.

Mr. R. M. Shone, a Director of the British Iron & Steel Federation, has been appointed a Member of the newly-formed Committee appointed by the President of the Board of Trade to advise on future policy regarding the taking of censuses of production and distribution.

Mr. T. W. Kendall has been appointed Sales Director, and Mr. P. H. Hylton, Marine Sales Manager, of Ruston & Hornsby, Limited, Lincoln.

Mr. George P. Joseph has relinquished the offices of Chairman of Murex Limited and Murex Welding Processes Limited and Sir Arthur J. G. Smout has succeeded him in both these capacities. Mr. Joseph will continue as a Director of the company and its subsidiaries.

Mr. A. D. Marris has been appointed a Director of Wm. Cory & Son.

We regret to record the death on May 1 of Mr. C. B. Taylor, Superintendent of the British Thomson-Houston Co. Ltd., King Edward Factory, Thorne, near Doncaster.

Mr. B. N. H. Thornely has been appointed to the Board of the Northern Aluminium Co. Ltd.

Mr. P. F. Matthews has been appointed Information Officer of the Vacuum Oil Co. Ltd.

Mr. J. I. Law-Brooks has relinquished the duties of manager, London District Office, Metropolitan-Vickers Electrical Co., Ltd., but he will carry out certain special duties and remain available for consultation until December 31, 1953. Mr. E. Mead has been appointed Manager, London District Office, as from May 1, 1953.

## Reinforced Concrete Sleepers in the Netherlands

In 1951 the Netherlands Railways decided to lay six trial sections of track on concrete sleepers, each 200 metres long, on the Biltoven-Den Dolder line. Each section has different types of sleeper, with fittings of French or German design, or with a combination of them. Trials with Dow-Mac sleepers had already been made in 1947 and concrete sleepers of Dutch design have been in service already at Amersfoort.

Details of these installations have been given by Civil Engineer J. A. van der Breggen, Netherlands Railways, and C. Verruyt, Director of the Nederlandse Spanbeton, in the Dutch journal *Cement*. One of the three main types of concrete sleepers which, with some modifications have been used on the new trial section since May, 1952, is the so-called "B12" type of sleeper developed by the German Federal Railways. This is manufactured in accordance with the Karig system. It has an overall length of 2.3 metres (8 ft. 6½ in.) and consists of two strong trapezoidal concrete blocks held together by a much thinner central section. The clamping plates are supported by channel-shaped steel holders embedded in the concrete. The coach screws are screwed into wooden dowels which are likewise embedded in the concrete and must be renewed, from time to time, by a tool specially designed for this purpose. The sleeper is pre-stressed by means of two bars of high-tensile steel and ½ in. diameter. The pre-stressing force, which amounts to at least 24 tons, is imparted gradually.

The second type is a pre-stressed concrete sleeper produced by Nederlandse Spanbeton more or less in accordance with the French S.T.U.P. design. The length of the sleeper is 2.36 metres (7 ft. 9 in.). The contraction of the central part is not quite so pronounced as with the German design. The clamping plates rest direct on the concrete in a recess which is closely adapted to the shape of the plates and runs across the whole width of the sleeper. The screws are dipped in hot asphalt before being inserted in holes in which helicoidal steel dowels are fitted. The pre-stressing effect is imparted by means of sixteen hard-steel wires. Initially, a force of 32 tons was applied, but this was later increased to 40 tons. For trial purposes, different types of Belgian and German steel were used. The sleepers are produced in moulds, designed for four at a time. After bringing the wires into position, the concrete is brought in, vibrated and steam-hardened.

The third type used is made by Nederlandse Spanbeton, to the pattern of the French *traverse économique*, developed by R. Sonnevillain of the Vagneux type. It consists of two concrete blocks, connected by a steel transom of T-shape cross-section which is embedded in the concrete blocks and consists of un-rolled rail steel made in France. The bar is about ⅝ in. thick. The clamping plates are held by T-head bolts, so arranged that the T-head fits into a special recess in the steel transom, thus affording the necessary backing for the nut. These sleepers are manufactured, in France, at the rate of 100 per day. The life of these sleepers is mainly dependent on that of the steel transom, which is treated in an acid bath and protected with a coating of bituminous lacquers.

The trial section was put into service in May, 1952. As all the sleepers are still in perfect condition, it is still too early for specific results to be obtained.

## Indian Railway Centenary Celebrations

*Functions at New Delhi and other cities  
to mark 100 years of railway development*

The Indian Railway Centenary Day celebrations were held on April 16 in the Railway Exhibition grounds at New Delhi. Mr. Lal Bahadur Shastri, Minister for Transport & Railways; Mr. O. V. Alagesan, Deputy Minister; Mr. Shah Nawaz, Parliamentary Secretary; Members of the Railway Board and senior railway officials received Dr. S. Radhakrishnan, the Vice-President, at the New Delhi ceremonial platform. Dr. Radhakrishnan deputised for Dr. Rajendra Prasad, the President, who was indisposed. After inspecting the guard of honour provided by the Northern Railway, he was conducted to the special train arranged to take the party to the exhibition grounds, where a large audience including Cabinet Ministers, diplomats, and senior officials awaited.

Mr. S. S. Vasist, Member for Transportation, Railway Board, said that today the Indian railway system was the largest in Asia and the fourth largest in the world. The capital outlay, Rs.38 lakhs in 1853, was Rs.862 crores in 1951-52. It was to be hoped that before long the railways would not only be meeting the current requirements of trade and industry but also developing facilities and services to get ahead of the nation's expanding industrialisation. Mr. Vasist then introduced to the audience Mr. Durga Manoo, the oldest serving railwayman in India, who was appointed on the Indian Midland Railway in 1900.

The Minister for Transport & Railways recalled that railways appeared in India at a time when there were scarcely any internal communications worth the name and nothing could have been more welcome to the country than the changes which they brought about. The second world war and the partition of the country which followed profoundly affected the Indian railways. Nevertheless in six years their progress had been such as to satisfy the severest critic. The railways had been regrouped successfully into six zonal systems, an organisational change of far-reaching importance. Dismantled lines had been restored and new lines opened. Chittaranjan works was now producing locomotives and a large coach building works at Perambur was being built.

Dr. Radhakrishnan, to whom the Minister for Transport & Railways presented a commemorative volume on Indian railways, looked forward to a lessening of international tension which would release more money for constructive purposes and therefore enable them to allot more funds to the railways. He congratulated the Railway Minister, the members of the Railway Board and every railwayman on the success which they had achieved.

A documentary film entitled "A Century of Progress" was then shown, with a running commentary on the developments during the period. In the evening there was a centenary dinner in the exhibition grounds.

The day was observed as a holiday on all railways, and celebrations also were held at other places. That at the Victoria Terminus in Bombay had a special significance as the first train in India ran from Bombay (Boree-Bunder) to Thana. At the meeting held in the afternoon of April 16, attended by Mr. F. C. Badhwar, Chairman of the Railway Board, Mr. Girja Shanker Bajpai, Gov-

ernor of Bombay, presided. Mr. H. P. Hira, General Manager, Central Railway, who welcomed the guests, traced the development of the system to its present mileage and organisation. Mr. Badhwar compared the function to a birthday party, and added that as presents were usual on such occasions the public might offer one in the form of consideration and understanding of their problems. Mr. Bajpai praised the efficient work of the railwaymen. There was an exhibition of old and new rolling stock, and models.

At a meeting of the officers and staff of the Western Railway at Bombay, held on the lawns adjoining the Churchgate Building, Mr. K. P. Mushran, General Manager, spoke on the importance of the occasion. At Calcutta there was a celebration at the Garden Reach office of the Eastern Railway, presided over by Dr. H. C. Mukerjee,

Governor of Bengal. Mr. K. B. Mathur, General Manager of the Eastern Railway, reviewed in a speech the history and progress of the system. The Governor's speech referred appreciatively to the contributions made by railways to the economic progress of the country. Dr. B. C. Roy, the Chief Minister of West Bengal, emphasised the importance of the railways to the economy of Eastern India. A the headquarters of the North Eastern Railway at Gorakhpur, Mr. G. Pande, General Manager, addressed the officers and staff.

Headquarters offices, workshops and important stations were illuminated on all railways. The illuminations at Victoria and Churchgate, Bombay, were elaborate and attracted thousands of sightseers. At Delhi, the main station and the headquarters offices at Baroda House and at Calcutta the Fairlie Place offices, and Howrah and Sealdah stations were illuminated. Undeterred by an electricity cut, the Southern Railway brought out wick and oil lamps to illuminate the frontage of Egmore Station, Madras, in a manner reminiscent of the Deepavali, or Festival of Lights.

## Summer Meeting of the Institution of Locomotive Engineers

*Visits to locomotive and electrical equipment works in Lancashire: potentialities of electric and diesel traction*

The summer meeting of the Institution of Locomotive Engineers was held in Lancashire, with Southport as a base, on May 6-8. It opened with a visit to the Vulcan Locomotive Works, Newton-le-Willows, on May 6, when members were guests of the Vulcan Foundry Limited. Special coaches conveying the contingent from London and places en route were worked to Vulcan Halt. Guests were welcomed by Viscount Bridgeman, Chairman of the company, supported by Colonel G. Collingwood, Managing Director. After luncheon members were conducted over the works.

### Four Types of Traction

Products on view, both finished and under construction, included steam, electric, diesel-electric, and diesel-mechanical locomotives, namely, oil-fired 2-10-2 type, for the Iranian State Railways (4 ft. 8½ in. gauge); Co-Co type, 3,600-h.p., 3,000-V. d.c. (in collaboration with the English Electric Co. Ltd.), for the Spanish National Railways (5 ft. 6 in. gauge); Co-Co type, 1,500-h.p., diesel-electric (also in collaboration with the English Electric Co. Ltd.), for the Queensland Government Railways (3 ft. 6 in. gauge); and 0-6-0 type, 204-h.p., diesel-mechanical (in conjunction with the Drewry Car Co. Ltd.) for the Mount Lyell Mining & Railway Co. Ltd., Tasmania (3 ft. 6 in. gauge). All these have been described in this or in our associated journal *Diesel Railway Traction*.

Thanking the Vulcan Foundry Limited for its hospitality, Mr. C. M. Cock, President of the Institution, commented on the uniqueness of the occasion with so many forms of traction represented. After tea, the party was taken by special train via Earlestown, Lowton, and Wigan to Southport.

### Visit to Dick Kerr Works, Preston

The English Electric Co. Ltd. were hosts on May 7. The party travelled by road from Southport to the company's Dick Kerr Works at Preston. Among the

many products on view in various stages of construction were electric motorcoach equipment for the Warsaw electrified lines of the Polish State Railways; a 2,000-h.p. diesel-electric locomotive for the Southern Region of British Railways; 350/400-h.p. diesel-electric equipments for British Railways shunting locomotives; 400-h.p. diesel-electric shunting locomotives for the Netherlands Railways; Co-Co type, 2,400-h.p., 1,500-V. d.c. electric main-line locomotives for the Victorian Railways; electrical equipment for the R.E.N.F.E., and diesel-electrical equipment for the Queensland Government locomotives built in collaboration with the Vulcan Foundry Limited, mentioned above; and "Canberra" jet-propelled aircraft.

Members were entertained to luncheon at the Victoria & Station Hotel, at which Mr. J. T. Moore, Chief Engineer of the company, presided.

Later they were taken to Samlesbury Airfield, where a demonstration was given of jet aircraft flying.

### Mr. Cock on Railway Electrification

The Institution dinner was held at the Prince of Wales Hotel, Southport, on May 7. Mr. C. M. Cock, welcoming the guests, drew attention to his dual capacity as President of the Institution and as General Manager of the Traction Department of the English Electric Company. He expressed the thanks of all concerned to the committee responsible for the arrangements, of which Mr. J. F. B. Vidal was chairman, and to Mr. G. T. Hart, Secretary, and Miss J. M. Johnson, Assistant Secretary of the Institution.

It was time, Mr. Cock went on, for re-decoration of the British railway shop window, which had so long featured the steam locomotive, invented in Britain. Although he might, he said, be accused of partisanship because of the positions he now occupied and had occupied in the past, he would maintain the advantages of electric and draw attention to the possibilities of diesel traction. He stressed the achieve-



ments of and economies effected by electrification in Holland and France and of dieselisation in U.S.A.; not the least of those which would affect British railways were coal economy, increased user, and cleanliness.

### Overhead Electric Equipment

The party went by road on May 8 to the works at Prescott, near Liverpool, of British Insulated Callender's Cables Limited. It was shown the copper refinery, the rolling and drawing of copper and copper alloy wire and strip, the manufacture and assembly of electric traction fittings and the manufacture of heavy power cables.

Details, and in some cases specimens, were available of overhead electric equipment and power cables for railway electrification in Britain and many countries overseas, including the Liverpool Street to Shenfield, Manchester-Sheffield-Wath, and Manchester to Altrincham electrifications; main-line projects in India (G.I.P.R.), South Africa (Natal), Brazil (Santos-Jundiáhy) and New South Wales (Lithgow line); and suburban electrifications in Melbourne, Bombay (G.I.P.R. and B.B.C.I.R.), Warsaw, and Rio de Janeiro (Central of Brazil). Signalling and telecommunication cables and equipment supplied *inter alia* for Toton Down Yard, London Midland Region, also were depicted.

After this visit members were entertained by B.I.C.C. Limited to luncheon at Reece's restaurant, Liverpool. Mr. E. Bowyer, Manager (Production) of the company, presided. After luncheon Mr. Cock thanked British Insulated Callender's Cables Limited and drew attention to that company's long experience in manufacturing for the British and other railways.

The meeting then terminated, members for London and the south travelling back from Liverpool Lime Street.

## Electricity as an Aid to Production

This year's British Electrical Power Convention at Torquay from June 8 to 12 will have as its theme the influence of electricity on the national economy. A preliminary review of three of the papers to be delivered on that occasion was given at a meeting organised by the British Electrical Development Association at the Waldorf Hotel, London, on May 7.

Colonel B. H. Leeson, who will speak at Torquay on "Electricity and National Prosperity," described how the whole economy of the country had been changed by the activities of the electrical and engineering industries in particular. The electrical industry was the second largest exporting industry, coming only after the motor vehicle industry.

Mr. E. R. Wilkinson, reviewing the contents of his paper on "Electricity and Industrial Production," made the point that between 1947 and 1950 capital investment in industry in seven representative Western European countries averaged about 23 per cent of the national income as against only 14 per cent in Britain. In the same period Continental countries devoted an average of 9 per cent of all industrial capital expenditure to public electricity supply as against only 7 per cent in Britain. Mr. Wilkinson put forward the suggestion that the Government should accept as a part of its policy that greater electrification of industry was an essential for greater productivity.

## Signalling and Telecommunications during the East Coast Floods

### Quick repair and reinstatement of damaged A.T.C. on Tilbury line

Emergency measures taken by the civil engineering, operating, and locomotive departments of the Eastern Region against the floods on the East Coast last February were described in our April 3 issue.

Signalling and telecommunications also were seriously affected. Telephone communication was partially disrupted. Signalling was put out of action at many places by water 4-7 ft. deep. The gale which preceded the flooding had already brought down wires, poles, and trees, and made it extremely difficult to assess the extent of the damage. The Post Office wires had suffered similarly and the alternative means of communication, usually available when anything goes wrong with railway circuits, was cut off.

It was not until nearly 24 hr. after the initial flooding that sufficient information enabled a fair picture to be formed as to the nature of the damage, and where the lines were completely submerged, not until the water had subsided several days later.

### Damage to Communications

Broken line wires, stay wires, and fallen poles were the chief trouble. In some places the route of the pole line up to three-quarters of a mile had completely vanished where embankments had been washed away. Floating objects collided with poles and stay wires and knocked them over.

At the Parkeston Exchange a short circuit in the power supply caused by the flooding resulted in a fire which damaged both railway and Post Office cables.

### Signalling Apparatus and A.T.C.

Many tubular steel signals were brought down when the surrounding earth was washed away. Where lines were completely submerged the track circuits, relay and battery boxes, and electric point detectors and motors were put completely out of action, as was the swing bridge at Mitford Lock, Oulton Broad.

In the Tilbury Section some signalboxes were flooded up to the signalman's floor level. All equipment in these boxes, such as relays, circuit breakers, and so on, was badly affected by the sea water and had to be changed and the apparatus rewired. The A.T.C. electric inductors near Leigh and Benfleet were not functioning and the associated equipment also was rendered useless.

At New Holland, on the Humber, a signal gantry was wrecked by the funnel of a ferryboat which had broken loose.

### Remedial Measures

Immediately the first messages came through to the Area offices arrangements were made for these to be manned so as to collect and deal with messages and maintain contact with inspectors.

As most supervisors were out on jobs previously arranged for the week-end work, they were already near the flood damage and acted on their own initiative. The gang staff were diverted from the programmed work and set on to restore communications. Arrangements were made at the supervisors' depots to send out repair materials by road. The mechanical gang staff set to work to clear the debris from the mechanical fittings, subsequently cleaning and oiling them.

As the flood water subsided this work continued throughout the following week. Where signals had been brought down improvisations were resorted to and old telegraph poles were erected and fitted with signal bearings and semaphore arms. Most of the damage, where accessible, had been repaired by the tenth day.

Between Leigh and Benfleet, where the flood persisted, the S. & T. installers were working standing in water to renew the track circuit relay cupboards and wiring, and this section was functioning under normal working with track circuits and controls by the sixteenth day.

The A.T.C. electric inductors had to be sent to shops for overhaul. They were received back on site within five weeks, and normal A.T.C. working resumed six days later.

Contact with the operating department was maintained throughout the period so that facilities could be restored in the order which most suited traffic routes. Assistance was also rendered to the civil engineer's department by provision of telephonic communication for warning the staff of any likely impending danger.

## Proposed Link Between Denmark and Sweden

Plans for a railway and road connection between Denmark and Sweden across the Oresund Straits have been considered for a long time. In 1936, a detailed plan for a bridge between Copenhagen and Malmö was worked out by a group of Danish engineering companies as part of a major scheme for motor roads across Denmark. The plan aroused considerable interest at the time but its reception by Sweden was somewhat lukewarm, and little progress had been made when the war put a stop to the scheme.

As almost all surface traffic between Sweden and Finland and Western Europe now goes *via* Denmark, the traffic across the Oresund has greatly increased. Closer relations between Sweden and the other Scandinavian countries have made the plan for a connection much more acceptable to Swedish public opinion. The Danish engineering firms have therefore produced a modified version of their earlier scheme for a railway and road connection across the straits, which was the subject of a recent address before the Danish Institution of Civil Engineers.

In principle, the proposed connection follows the general alignment of the earlier scheme, between Copenhagen and Malmö, using the islands of Amager and Saltholm as stepping stones. Increased traffic and the proposed enlargement of Copenhagen airport at Kastrup, on the island of Amager, have made it necessary to move the proposed route further south and, more important, to cross the straits on either side of Amager in tunnels rather than on bridges which would have had to be so high as to impede the approach of aircraft. The straits between Saltholm and the Swedish coast, however, would still be crossed on a five-mile viaduct as envisaged in the earlier scheme.

The road tunnels and bridges would provide for four traffic lanes, with a maximum gradient of 1 in 33. The railway

line would be single-track but for a crossing loop on the island of Saltholm, and its maximum gradient would be 1 in 100, so that some of the railway approach ramps of the bridge and tunnel sections would be segregated from the road ramps. The railway, which is assumed to be electrified, would link with the Swedish State Railway system south of Malmö. On the Copenhagen side, the connections would be more difficult, particularly as the trains would have to enter the Central Station from the south and reverse there before continuing towards Jutland and the south. An existing local railway on the island of Amager, which might also serve the airport, could be linked to the Oresund line.

The total length of line from Copenhagen to Malmö across the Oresund would be about 23 miles, including two tunnel sections, 3·4 miles and 2·2 miles long. The cost of the whole scheme is estimated at £50,000,000. It would be spread over ten years as the construction alone would take eight years. It is suggested that half of the cost should be financed by outright annual contributions from the Danish and Swedish Governments (who would thus each contribute £12,500,000 spread over a period of ten years); the remaining £25,000,000 would be raised by loans, repayable from the road tolls which it is proposed to levy. The railways would also make an annual contribution, provisionally assessed at £150,000.

The Danish engineers have also investigated, though not to the same degree of detail, an alternative scheme (either on a bridge or in tunnel) for an Oresund crossing between Helsingør (Elsinore) and Helsingborg where the coasts are closest. Unfortunately, the greater depth and stronger current of the water and the less suitable subsoil make this scheme less attractive, although it would provide a better alignment from the railway point of view as trains between Sweden and Western Europe could run through Copenhagen without reversing. It would, of course, be possible to segregate the road and railway schemes, as by constructing a road connection between Copenhagen and Malmö, and a single-track railway tunnel between Elsinore and Helsingborg.

## Staff & Labour Matters

### T.S.S.A. Annual Conference

Delegates at the annual conference of the Transport Salaried Staffs' Association at Folkestone on May 11 agreed by 43,200 votes to 39,350 to demand longer holidays, a shorter working week, more pay for overtime, night and Sunday duty, higher lodging allowances, and more generous expenses allowances. The present working week does not exceed 42 hr., the proposal is that it should not exceed 38 hr. A three weeks' holiday is demanded for staff with up to 15 years service and a month's holiday for those with over 15 years.

The resolution was passed against the advice of the Association leaders, and the Secretary, Mr. G. B. Thorneycroft, suggested that the aim should be an improvement in the basic pay rather than miscellaneous concessions which would not benefit all members.

In his presidential address, Mr. Percy Morris, who is retiring after ten years as President, criticised the proposed inquiry into London Transport. He said that if the

inquiry committee discussed wages and salaries it would be a flagrant violation of the undertaking given by the Minister of Transport that such matters would continue to be dealt with on a centralised basis.

### Engineering Pay and Conditions

After its decision to back the C.S.E.U. recommendation for a 15 per cent pay increase for engineering and shipbuilding workers, the national committee of the A.E.U. on May 5 passed unanimously a composite resolution asking the executive council to press immediately for a 40-hr. week without loss of earnings.

It was claimed that when the working week was shortened production had invariably gone up. The average 40-hr. week in U.S.A. did not prevent that country from competing successfully in world markets. It also was contended that the 40-hr. week would minimise unemployment.

Delegates urged that there should be prior consultation before redundancy was declared; that overtime should cease in departments where redundancy was contemplated; that Government centres for the training of engineering workers should be permitted only by agreement with the unions; and that a lump sum should be paid to workers declared redundant.

### Cafeteria Car Staff

Writing in *The Railway Review* of May 8, Mr. B. Colling, President of the National Conference of Railway Catering Grades, states that the introduction of cafeteria cars on British Railways raises a matter which the N.U.R. must deal with if the position of these grades is to be safeguarded. It is recognised that cafeteria cars are necessary where restaurant cars would be uneconomic.

They require three units to work them, and the question at issue is whether these cars should be worked by restaurant car travelling staff or by other means, such as casual labour at 2s. 9d. an hour, with a commission of 2 per cent on sales.

It is contended that the casual work is being done by staff working on their rest days and that the 88-hr. fortnight was not negotiated to enable men to work their rest day to the detriment of other workers.

Restaurant car travelling staff feel that the work, which they claim is rightfully theirs, is being taken from them by men who already enjoy much better wages and conditions of employment.

## Parliamentary Notes

### Steel Supplies

In a written reply to Mr. Hector Hughes (Aberdeen N.—Lab.), who asked what representation Scottish steel users would have on the body which the Minister of Supply was setting up to deal with the allocation of supplies of steel in Britain, Mr. Duncan Sandys (Minister of Supply) said on May 11 that this body was an Inter-departmental Committee of officials of the Departments concerned. The Secretary of State for Scotland would be represented.

### Road Haulage Disposals Board

Mr. James Callaghan (Cardiff E.—Lab.) on May 11 queried the appointment to the Road Haulage Disposals Board of Mr. James Barrie, a nominee of the Road Haulage Association, and asked whether he had also been nominated by it as a director of Transport Unit Finance, a company set up by the United Dominions Trust to lend money to buyers of the lorries.

Mr. Alan Lennox-Boyd (Minister of Transport) said that before making any appointment of that kind he inquired into the interests of the persons whose names were before him. He did not accept that the appointment to this particular Board necessarily constituted a bar to this appointment.

Mr. C. R. Attlee (Leader of the Opposition) submitted that it was a question of wisdom in appointing someone to a position of trust who would at the same time be interested in selling for the Government and also buying for another organisation.

Mr. Lennox-Boyd agreed that it would be wrong for a person to be interested in a particular sale or series of sales and sit on the Disposals Board. But the Government's position had been made perfectly clear.

### London Transport Inquiry

Mr. Alan Lennox-Boyd (Minister of Transport) said on May 11, in reply to a question as to the proceedings of the forthcoming Committee of Inquiry into London Transport, that the way in which the Committee conducted its inquiry should be left to the discretion of the Chairman; but experience had shown that the most useful results were obtained when the proceedings were in private. The Committee's report would, however, be laid before Parliament.

### British Transport Commission Bill

The British Transport Commission Bill, as amended, passed the Report stage in the House of Commons on May 5. An account of the debate on the Second Reading of this Bill, which provides for certain major works, appeared in our issue of March 20.

**BRITISH RAILWAYS CORONATION POSTERS.**—Our attention has been drawn by Mr. C. J. Rider, acting Public Relations & Publicity Officer, Western Region, to a misleading impression created by our heading and caption to the coronation posters reproduced on page 550 of our May 1 issue. The posters were produced by the Western Region on behalf of British Railways. One is being displayed at stations throughout England and Wales from May 12 until the end of June. The other is being displayed at Scottish Region stations in the same period. Neither was designed exclusively for the Western Region.

**BIRMINGHAM RAILWAY CARRIAGE & WAGON CO. LTD.**—An ordinary dividend of 10 per cent less tax for the year ended December 31, 1952, was approved at the annual general meeting on April 29 of the Birmingham Railway Carriage & Wagon Co. Ltd. The Chairman of the company, Sir Bernard Docker, pointed out in his statement that the small improvement in sales did not reflect increased production but increased costs that followed advances in wages, steel, coal, and transport charges which, in turn, forced up the price of many other materials and components. He was perturbed lest such increases seriously prejudiced this country in markets abroad, with increasing competition from the Continent and Japan, where comparative production was at a much higher rate. Increase in British production, he said, was more important now than ever before. A solution of the international exchange problem was vital to the carriage and wagon building industry, so dependent on export markets; with the urgent need for rolling stock abroad cancellation or postponement of orders due to the purchaser's exchange difficulties were deplorable.

## Contracts & Tenders

The Crown Agents for the Colonies have ordered 25 bogie cattle wagons for the Nigerian Railway from Cravens Railway Carriage & Wagon Co. Ltd.

British Railways, North Eastern Region, have placed the following contracts:—

The Yorkshire Hennebique Contracting Co. Ltd., Leeds: Supply of post-stressed concrete beams at Wakefield, Ardsley, Sunderland, Bowes Bridge, Goole, and Sowerby Bridge Motive Power Depots.

Wellerman Bros. Ltd., Sheffield: Strengthening of Bridge No. 79, Tarsset, Border Counties Branch.

British Railways, Eastern Region, announce that the undermentioned contracts have been placed:—

Drewry Car Co. Ltd., London, E.C.2: Supply and delivery of two diesel-mechanical shunting locomotives at Ipswich and Colchester.

Wellerman Bros. Ltd., Sheffield: Replacement by reinforced concrete pipe of stream under bridge between Waltham Junction and Staveley and Oak Sidings (Eaton Branch).

Bernard Pumfrey Limited, Gainsborough: Construction of Ambulance Buildings at Doncaster (Crimpsall) Shops.

J. Arundel & Co. (Louth) Ltd., Louth: Cleaning and painting of Thorpe-le-Soken, Kirby Cross, Frinton-on-Sea, and Walton-on-Naze Stations.

R. Ridd & Son (Contractors) Ltd., Hornchurch: Cleaning and painting of Tilbury Riverside Station.

George Simpson (London) Limited, London, S.W.1: Reconstruction of goods offices at Mile End Goods Depot and construction of an enclosure for diesel-electric locomotives at Kings Cross Motive Power Depot.

The Government of Pakistan is asking for tenders for the supply of transit sheds for the port of Chittagong. Full details are given under Official Notices on page 579.

The United Kingdom Trade Commissioner at Delhi has notified the Commercial Relations & Exports Department of the Board of Trade of a call for tenders issued by the Directorate General of Supplies & Disposals, Government of India, for 2,381 locomotive boiler flue tubes, smoke tubes and brick arch tubes (20 items).

Tenders should reach the Directorate-General of Supplies & Disposals, Shahjahan Road, New Delhi, by 10 a.m. on May 28. A copy of the tender documents is available for inspection at the Board of Trade until May 16, and thereafter on loan in order of application. Reference CRE/16415/53 should be quoted.

The Special Register Information Service of the Board of Trade, Commercial Relations & Exports Department, reported that the Commercial Secretariat, British Embassy, Bangkok, has notified a call for tenders issued by the Port Authority of Thailand for the supply of 60 lb. steel rails, points, crossings, accessories and turnouts.

Tenders should reach the Port Authority of Thailand, Bangkok (Klong Toi), Harbour Administration Building by 11 a.m. on June 15. A copy of the tender documents and drawings is available for inspection until May 23, and subsequently will be available on loan in order of application. A further copy of the tender documents (without drawings) is immediately available on loan.

The Director-General of Supplies &

Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for:—

(a) 128 (or 64 loco. sets) axlebox keep and lubricator assemblies complete (driving).

384 (or 64 loco. sets) axlebox keep and lubricator assemblies complete (leading, inter and trailing).

(b) 200 bars cross for brake block with nuts (steel Class II).

100 brake beam (m.g.) (complete).

(c) 325 C.S. axleboxes, 7 in. by 3½ in., for centre wheel, six-wheel wagon.

500 C.S. axleboxes, 7 in. by 3½ in. journal.

2,300 C.S. axleboxes, 7 in. by 4 in. journal.

160 C.S. axlebox body (m.g.), 9 in. by 4½ in. journal.

45 C.S. bogie axlebox (m.g.), 9 in. by 4½ in. journal.

Tenders should be submitted to the Director-General of Industries & Supplies, Shahjahan Road (Section SR1), New Delhi, quoting the following references: for tender (a) SRI/16141—D/I; (b) SRI/16248—D/II; (c) SRI/16247—D/I. They will be received up to 10 a.m. on (a) June 3; (b) June 4; (c) June 16.

The Special Register Information Service of the Board of Trade, Commercial Relations & Exports Department, states that the United Kingdom Senior Trade Commissioner at Pretoria has notified a call for tenders issued by the Union Tender & Supplies Board for:—

Two diesel locomotives, 3 ft. 6 in. gauge, 40-50 h.p., 7-10 tons weight, for shunting. The locomotives are to be provided with three-speed gearboxes with speeds varying from 3-9 m.p.h. in either direction, and to be fitted with a steel cab with glass windows, and with buffers and couplings to suit S.A.R. rolling stock.

Tenders, which should reach The Chairman, Union Tender & Supplies Board, 271, Visagie Street, P.O. Box 371, Pretoria, by 9 a.m. on June 11, should be enclosed in a sealed envelope bearing the name and address of the tenderer and clearly endorsed "Formal Tender S.O. 7540."

A copy of the tender document is available for inspection at the Board of Trade until May 20, after which date it will be available on loan in order of application. Reference CRE/15666/53 should be quoted.

The Special Register Information Service of the Board of Trade, Commercial Relations & Exports Department, reports that the United Kingdom Trade Commissioner at Delhi has notified calls for tenders by the Directorate General of Supplies & Disposals, Government of India, for:—

(a) 200 bars, cross for brake block with nuts.

100 brake beams (m.g.) (complete).

(b) 5,900 axlebox bearings (C. & W.), 7 in. by 3½ in.

4,500 axlebox bearings (C. & W.), 7 in. by 4 in.

1,200 axlebox bearings, 8 in. by 4½ in., for W.D. wagons.

700 axlebox bearings, 7 in. by 4 in. (m.g.).

(c) 325 C.S. axleboxes, 7 in. by 3½ in., for centre wheel six-wheel wagons.

500 C.S. axleboxes, 7 in. by 3½ in. journal.

2,300 C.S. axleboxes, 7 in. by 4 in. journal.

160 C.S. axlebox bodies, (m.g.) 9 in. by 4½ in. journal.

45 C.S. bogie axleboxes (m.g.), 9 in. by 4½ in. journal.

Tenders should reach the Director General of Supplies & Disposals, Shahjahan Road, New Delhi, by 10 a.m. on (a) June 4; (b) June 8; (c) June 16.

A copy of the tender documents is available for inspection at the Board of Trade by representatives of United Kingdom manufacturers. A further copy is available on loan in order of application. References CRE/15862/53 for (a), CRE/15873/53 for (b), and CRE/15872/53 for (c) should be quoted.

The Director-General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for the following:—

6,000 coupling yoke pins (m.g.).

2,000 pins, cotttered flat head, ¾ in. dia. × 6½ in. long.

4,000 brake blocks, tender, for MAWD locomotives and W.D. wagons.

50 (25 l.h. and 25 r.h.) modified (cast steel) crossheads for "WP," "WP/P" (unmachined).

Centre buffer components, carriage and wagon

4,700 coupling yoke pins (m.g.).

400 coupling hooks (m.g.).

600 coupling hook heads (m.g.).

550 coupling drawbars (m.g.).

700 coupling screws.

700 coupling outside casings (m.g.).

1,400 buffer coupling pivot pins (m.g.).

Tenders are to be submitted to the Director-General of Industries & Supplies, Shahjahan Road (Section SR1), New Delhi.

RAILWAY BENEVOLENT INSTITUTION.—At a meeting on April 22 the board of the Railway Benevolent Institution granted annuities to 13 widows and 15 members involving an additional liability of £500 1s. 0d. per annum. Fifty-nine gratuities were also granted, amounting to £554 10s., to meet cases of immediate necessity. Grants made from the casualty fund during the month of March amounted to £817 15s.

PASSENGER SERVICES TO BE WITHDRAWN FROM HIPPERHOLME.—As the daily passenger train service at Hipperholme, N.E. Region, is being maintained at a financial loss, it is announced that it is necessary to withdraw it on and from Monday, June 8. Facilities will be retained, however, for dealing with special party and excursion traffic. The goods facilities will remain and the goods station staff will be available for accepting and delivering parcels traffic for which a cartage service is not required. Facilities for all other parcels traffic are available at Halifax, from which point the present road collection and delivery service will be maintained.

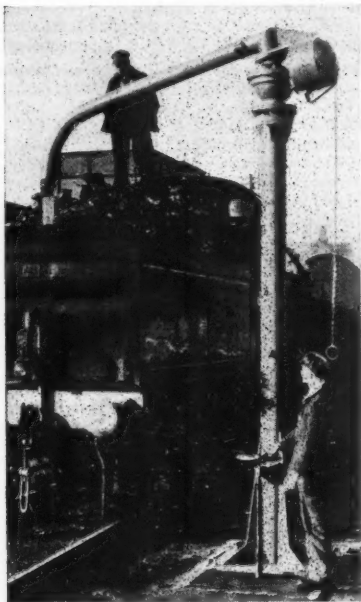
WITHDRAWAL OF PASSENGER TRAIN SERVICES FROM GOSPORT BRANCH.—Passenger services between Fareham and Gosport will be withdrawn on June 8, and Gosport and Fort Brockhurst Stations will be closed to passengers. There are frequent omnibus services in the area connecting with trains at Fareham station, and the Gosport Ferry plies to and from Portsmouth Harbour Station. Existing freight services will be maintained at Gosport and wagonload traffic will continue to be dealt with at Fort Brockhurst. The Fareham-Gosport branch of the L.S.W.R., first opened in 1841, was the first railway to serve Portsmouth (via Gosport and the ferries), before the L.B.S.C.R. and L.S.W.R. entered the town direct from the north. The short branch off the Gosport branch, to Stokes Bay Pier, for many years conveyed Isle of Wight traffic, including that to and from Queen Victoria's residence at Osborne House, near Cowes.



## Notes and News

**Crown Agents for the Colonies.**—Applications are invited for the post of accounting assistant required by the East African Railways & Harbours Administration Accounts Department for tour of 40 to 48 months with prospect of permanency. See Official Notices on page 579.

**New Water Column on British Railways.**—British Railways are trying out a new type of water column for filling the tanks of locomotives. It is easier to handle, more economical in use, avoids waste of water, and is frost-proof. The column has a



The new watering column showing the aluminium arm feeding to the tender tank

long aluminium pipe-arm at the top which can be swung round to any point and the tip depressed over the engine tank with one hand. The tip is held down by the weight of the water running in from the main and it rises when the water is turned off, the surplus water draining back into the supply pipe. As the water can be turned off below ground level, the column will be unaffected by frost.

**New Brisbane River Bridge.**—It is reported that ten tenders ranging from £407,538 to £913,576 have been received for the erection of the new railway bridge across the Brisbane River near Indooroopilly. Tenders were received from leading British and Australian engineering firms and two each from Western Germany and France.

**Railway Students' Association.**—Visits have been arranged by the Railway Students' Association to inspect Feltham Marshalling Yard, Southern Region, on the evening of Thursday, June 11, the brewery of Arthur Guinness, Son & Co. Ltd. at Park Royal, London, on the morning of Saturday, June 13, the resignalling at Euston Station, London Midland Region, on Thursday evening, June 25, and the new signalling installations between Selhurst Junction and Victoria, Southern Region, on the evenings of Tuesday and Thursday, July 7 and 9. On Saturday, June 27, members and their friends have been invited to visit the

Southern Railway Orphanage at Woking; the visit will be followed by a motor coach tour of some of the beauty spots in Surrey.

**British Railways Coal, Iron and Steel Traffic.**—Deep-mined and open-cast coal cleared by British Railways during the weekend amounted to 366,290 tons, and made the week's total up to 6 a.m. on May 11, 3,185,200 tons. During the week ended May 2, 227,259 tons of iron and steel from the principal steel works and 357,200 tons of iron ore were conveyed.

**Inquest on Victims of "Duke of York" Collision.**—At Harwich on May 11 the inquest was opened on five persons who died when the British Railways steamer *Duke of York* was in collision with the American ship *Haiti Victory* on May 6. After hearing evidence relating to the search for bodies in the ship, the Coroner adjourned the inquest until after the Ministry of Transport inquiry. The collision was reported briefly in our May 8 issue.

**Trial Run of new Breda-built Trains on Italian Railways.**—On May 2 the first of two multiple-unit, high-speed electric sets ordered from Società Italiana Ernesto Breda by the Italian State Railways made a trial run from Rome to Naples and back, conveying a party of guests. A maximum speed of approximately 180 km.p.h. was reached. The sets are composed of seven coaches, articulated, and have a total accommodation of 160 passengers. The first train will go into regular service on May 18 on an 8 hr. 50 min. schedule between Milan and Naples.

**Inquiry into Loss of "Princess Victoria."**—Public hearings at the inquiry at Belfast into the loss of the British Railways vessel, *Princess Victoria*, concluded on May 9. Meetings of the Chairman, Mr. J. H. Campbell, Q.C., and his three assessors, will be resumed in private on May 26. The findings are expected at the end of this month or early in June. On May 9 Mr. W. B. Topping, Q.C., for the Ministry of Transport said it was the Ministry's view that when the ship sailed it was seaworthy, fully equipped, and properly maintained. The suggestion was that it was possible that there was a combination of circumstances which could not reasonably have been foreseen.

**Reconstruction of E.R. Victoria Street Office.**—The Eastern Region announces that work has begun on the scheme for reconstructing and modernising the ticket and inquiry office at 110, Victoria Street, London, S.W.1. The scheme provides for the complete modernisation of both the interior and the exterior of the offices. Alterations to the interior will allow the main portion of the ground floor to be used as a public circulating area with improved facilities for dealing with heavy ticket issuing and inquiry work. New counters will be installed for ticket issues, seat reservations, and inquiries; and a suitably furnished waiting area is included in the layout. Bellmatic and other special ticket storage equipment will be fitted. Adequate office and messing accommodation for the staff is to be provided.

**Plywood Panelling and Blockboard.**—A motor van, the interior of which was constructed of resin-bonded plywood and some 55 different veneers by the Edmonton Panel Co. Ltd., a member of A.V.P. Industries Limited, was displayed recently at Fetter Lane, London, E.C.4. In addition to the decorative panelling, the

display included veneered furniture built by other member companies of the group. The plywoods are manufactured ready for painting, veneered, or plastic or metal-faced, depending on the specification. The display van will shortly tour various parts of the country.

**Turner & Newall Limited.**—The directors of Turner & Newall Limited (asbestos, magnesia, and allied products) have declared a half-yearly dividend on the 7 per cent cumulative preference stock to March 31, 1953, payable on Saturday, June 13, 1953, less income tax at 9s. in the £.

**British Timken Limited.**—A group net profit for the year to December 31 last of £504,274 is shown in the accounts of British Timken Limited, comparing with £464,227 in the previous year. Depreciation has taken £318,305 (£329,998) and taxes £374,598 (£638,284). The carry-forward by the group of £453,433 compares with £549,960 brought in. A dividend of 10 per cent is recommended for 1952 on a capital increased by a two-for-one share bonus, which compares with 25 per cent paid on the smaller capital.

**Electrical Installations and Exports.**—The report of the British Electrical & Allied Manufacturers' Association (B.E.A.M.A.) for 1952-53 mentions a record installation of plant for the British Electricity Authority of 1,540 MW., compared with 1,235 MW. in the previous year, while exports achieved the record total of over 900 MW. Exports in general were outstanding, the total of £218 million being an increase of 15 per cent on the 1951 figure. Much of the increase was due to an improvement of £10.5 million in machinery exports, and to the expansion of £8.5 million in shipments of electric wires and cables.

**R.H.A. Support for Transport Act.**—The Road Haulage Association has issued a statement congratulating Her Majesty's Government and in particular the Minister of Transport, Mr. Alan Lennox-Boyd, on piloting through Parliament the Transport Act of 1953. While recognising that the Act calls for a change of outlook on the part of many concerned with the industry and a supreme effort in enterprise by all road hauliers to meet the challenge which the Act undoubtedly offers, the Association will give full support to the Government in carrying its policy into effect. The Association will give assistance throughout England, Scotland, and Wales to its members who wish to extend their activities into the long-distance field and to others wishing to return to the industry. Those requiring financial assistance will be helped in every way possible. During the transitional period the area and sub-area offices of the Association will be available to assist traders and industrialists (wherever necessary) and to see that the traffic flows smoothly and efficiently.

**Fellowships in Victoria.**—The Victorian Agent-General in London, Sir John Lienhop, has announced details of a further four Fellowships to be made available during 1954 under the British Memorial Fund. They are offered to British nationals with at least 10 years' residence in the United Kingdom, and are for metallurgy, pre-school education and child development, arbitration (industrial), and British Commonwealth studies. Each fellowship is for £A1,000 to cover travelling expenses to and from Melbourne and 10 months' living expenses in the State of

## OFFICIAL NOTICES

GOVERNMENT OF PAKISTAN  
MINISTRY OF COMMUNICATIONS (RAILWAY DIVISION)TENDER NOTICE  
CHITTAGONG PORT DEVELOPMENT

**TENDERS** are invited for the supply and delivery F.O.B. at Chittagong of approximately 2,600 tons of fabricated steelwork consisting of stanchions, roof trusses, sliding doors, rainwater gutters, down pipes and asbestos roofing sheets, north light glasses, etc., with fittings and complete in all respects ready for erection at site, for six Transit Sheds for the Port of Chittagong. The successful tenderers will be required to execute an agreement before commencing supplies and will also be required to furnish a security deposit for 10% of the value of the tender. Forms of Tender, Specifications, Contract documents and Drawings can be seen at the office of the Director-General Railways, Pakistan, Karachi, during office hours and can be obtained from:—

1. The Director-General, Ministry of Communications, Railway Division, W-II Branch, Government of Pakistan, Karachi, Pakistan.
2. The General Manager, The Port of Chittagong (Railway), Sadarghat Road, Chittagong, Pakistan.
3. The High Commissioner for Pakistan in U.K., 37-39, Lowndes Square, Knightsbridge, London, S.W.1, England.
4. The Embassy of Pakistan, 1744-R Street, Northwest, Washington D.C., U.S.A.

on payment of Rs.100/- or an equivalent amount in Sterling/Dollars which amount will not be refunded whether the tenderer is successful or not.

4. Tenders must be submitted in sealed covers marked "Tenders for six Transit Sheds for 'Chittagong Port'" and addressed directly to:—

The Director-General Railways,  
Ministry of Communications,  
(Railway Division),  
Government of Pakistan,  
Karachi, Pakistan.

so as to reach him not later than 11 hours on June 16, 1953. They will be opened in public in the office of the Director, Civil Engineering, Railway Division, Karachi, on the same date and time. The Quotations will be announced for the information of any tenderer who may desire to be present.

The Director-General Railways is not bound to accept the lowest or any tender.

## CROWN AGENTS FOR THE COLONIES

**ACCOUNTING ASSISTANT** required by East African Railways and Harbours Administration Accounts Department for tour of 40-48 months with prospects of permanency. Salary etc., according to experience in scale £923 rising to £1,053 a year. Superannuation Fund. Outfit allowance £30. Free housing or allowance in lieu. Free passages. Liberal leave on full salary. Candidates (male only) must have experience of operating and supervising a large Mechanical Accounting Installation. Apply in writing to the Crown Agents, 4, Millbank, London, S.W.1, stating age, name in block letters, full qualifications and experience and quoting M3B/33692/RA.

**ACCOUNTANT (TRAFFIC AUDITOR)** required by the Central Railway of Peru—about 30 years of age, preferably single, with general auditing and railway accounting experience, knowledge of Spanish desirable but not essential. Apply—THE SECRETARY, PERUVIAN CORPORATION LTD., 144, Leadenhall Street, London, E.C.3.

**THE GAS-TURBINE LOCOMOTIVE.** A technical description of the gas-turbine recently constructed by the Metropolitan-Vickers Electrical Co. Ltd. for the Western Region, British Railways. Subjects dealt with include body construction, bogies, traction motors, prime mover, generators and auxiliary equipment. A folding plate drawing of the locomotive is included together with illustrations and diagrams. Reprinted from *The Railway Gazette*, February 1, 1952. Price 5s. Post free 5s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

**N.E.R. HISTORY.**—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

**BOUND VOLUMES.**—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

**THE PROPRIETORS OF BRITISH PATENT NO. 632441**, relating to "Oscillating raceway grinders and methods of grinding raceways" are desirous of entering into negotiations with firms in this country for the purpose of exploiting the above invention, either by sale of the patent rights or by granting of Licences to manufacture on a royalty basis. Enquiries should be addressed to ABEL & IMRAY, Quality Court, Chancery Lane, London, W.C.2.

**REQUIRED** by the Central Railway of Peru two Locomotive Assistants preferably single and between 26/30. Qualifications: Full apprenticeship with British Railways or Locomotive Builders and experience in one or more of the following: Railway Machine Tool Operation. Welding Boiler works, Locomotive Running or Drawing Office. Also two fully trained Steam Locomotive Engineers aged between 30/45. Experience preferably in South America with locomotive running or locomotive workshops in supervisory positions. A.M.I.Mech.E., desirable and knowledge of Spanish essential. Apply SECRETARY, PERUVIAN CORPORATION LTD., 144, Leadenhall Street, London, E.C.3.

**REQUIRED** for Service on the Southern Railway of Peru, Assistant Civil Engineer (Divisional) with practical experience on Railway Maintenance. Required for service on the Guaqui La Paz Railway, Bolivia, two Assistant Engineers—one with electrical mechanical apprenticeship including experience with diesel engines and the other with apprenticeship permanent way department of British Railway and with drawing office experience. Good education activity and first class health essential, age 25/30 single. Knowledge of Spanish desirable or willingness to learn within six months. Apply: The Secretary, PERUVIAN CORPORATION LTD., 144, Leadenhall Street, London, E.C.3.

Victoria. Full particulars of the conditions of award may be obtained by writing to Sir John Lienhop at Victoria House, Melbourne Place, Strand, London, W.C.2. The closing date for applications is June 10.

**F. Perkins Limited.**—The report for the year ended December 31 last of F. Perkins Limited shows a net profit of £710,433, compared with £926,875 in 1951. Turn-over was expanded to the record figure of £11,374,203, an increase of £2,025,219. A statement by the Chairman printed with the report records the most interesting export order of the year as having been one for \$1½ million from the Canadian Government for 1,355 "P6" engines to be installed in Canadian Ford vehicles for use by the Bombay State Authority.

**Taltal Railway Co. Ltd.**—The report for the year ended June 30, 1952, of the Taltal Railway Co. Ltd., of which Mr. C. H. Pearson is Chairman, states that the loss for the year after allowing £4,564 for loss on exchange, was £11,975, which with the debit balance brought forward makes an adverse balance to be carried forward of £126,474 (against £114,499 for 1950-51). A tariff increase of 21 per cent granted in January, 1952, could not meet a subsequent rise in wages and in the price of fuel oil. A further application was made to the Chilean authorities in April, 1952; but it was not until July that an increase of 12½ per cent was granted—too late to help the 1951-52 results. Gross receipts at Ch.\$28,900,000, show a rise of Ch.\$8,200,000 and reflect in the main the higher tariffs as, apart from an increase in short-haul traffic, the total tonnage transported was almost the same as for the previous year. Expenditure at Ch.\$31,600,000 shows an increase of Ch.\$8,800,000. The cost of

materials for rolling stock and permanent way repairs followed the inflationary trend of prices in Chile. The terms of Decree

No. 632 of May, 1951, under which Ch.\$841,656 was provided in 1951-52 for renewals of locomotives and rolling stock,

## Dublin Terminus Floodlit



The Amiens Street Station of the Great Northern Railway (Ireland) at Dublin floodlit for An Tostal (the Festival of Ireland). The neon sign showing the company's initials is to remain permanently

and so on, were annulled as from July, 1952.

**Temporary Withdrawal of "Merchant Navy" Class Locomotives.**—British Railways announced on May 13 that all locomotives of the "Merchant Navy" Class are being temporarily withdrawn as a result of the breakage of an axle of one of the class at Crewkerne on April 24. The step is stated to be purely precautionary and the locomotives are not expected to be long out of service. Meanwhile, locomotives of similar power are being transferred to the Southern Region from other regions.

**Dorman Long & Company Report.**—The Chairman of Dorman Long & Co. Ltd., Sir Ellis Hunter, states in his report circulated with the accounts for the year ended September 27, 1952, that scarcity of raw materials adversely affected iron and steel production. The fall in production and delay in granting increases in maximum home prices of products to meet increased costs, with the fact that increases were inadequate, resulted in decreased profit on home sales earned by the iron and steel departments. However, profits on exports increased substantially, as did the results of the constructional and engineering activities of the parent company and its subsidiaries, so that group trading profits showed an improvement over those of the previous year. There was, he adds, some contraction in forward orders for constructional and engineering work, partly because of restrictions on capital expenditure and partly because of a tendency to discourage the use of steel in favour of ferro-concrete; but indications are that steel will be more freely available in 1953, and that every encouragement will be given to increase exports. The net profit for the period from the consolidated profit and loss account was £1,983,923, which with the balance from the previous year gives £2,109,925. This, less interim dividend paid and general reserve totalling £1,754,896, leaves a balance of £355,029. It is proposed to appropriate £209,792 for final dividend, leaving a balance of £145,237. The total of the interim dividend already paid and the final dividend proposed is equivalent to 7.976 per cent (less tax) on the issued share capital.

### Forthcoming Meetings

- May 16 (Sat.).—Royal Engineers Association, at the Duke of York's Headquarters, Chelsea, S.W.3, at 6.30 p.m. for 7 p.m. London Sapper Reunion.
- May 16 (Sat.) to 20 (Wed.).—Railway Students' Association. Annual Convention, in Brussels.
- May 16 (Sat.) to 21 (Thu.).—Permanent Way Institution: Annual Summer Convention at Cardiff.
- May 19 (Tue.).—Road Haulage Association, at Grosvenor House, Park Lane, London, W.1. 12.30 for 1 p.m. Annual Luncheon.
- May 21 (Thu.).—Locomotive & Carriage Institution of Great Britain & Eire, in the Railway Clearing House Board Room, 163, Evershoft Street, London, N.1, at 7 p.m. Paper on "Coal," by Mr. L. Theobald.
- May 27 (Wed.).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6.15 p.m. Annual General Meeting.
- May 29 (Fri.) to 31 (Sun.).—National In-

dustrial Safety Conference at Scarborough.

- May 30 (Sat.).—Permanent Way Institution, East Anglia Section, at 2 p.m. Visit to Whittemoor Marrelling Yard.
- May 31 (Sun.).—British Railways, Southern Region, Lecture & Debating Society. Afternoon visit to the Romney, Hythe & Dymchurch Railway, organised by members of the Eastern Region.
- June 5 (Fri.).—The Railway Club, at 57, Fetter Lane, E.C.4, at 7 p.m. Paper on "The Travelling Post Office," by Mr. C. W. Ward.
- June 6 (Sat.) to 14 (Sun.).—British Railways, Southern Region, Lecture & Debating Society. Continental Tour of the Western Pyrenees.
- June 7 (Sun.).—Railway Correspondence & Travel Society. Second South Yorkshire Rail Tour, leaving Sheffield Midland at 12.40 p.m.
- June 9 (Tue.).—Institution of Civil Engineers at Great George Street, West-

minster, S.W.1, at 5.30 p.m. Annual General Meeting.

- June 11 (Thu.).—Railway Students' Association. Evening visit to Feltham Marrelling Yard, Southern Region.
- June 13 (Sat.).—Railway Students' Association. Visit to Guinness' Park Royal Brewery. Party will meet at 9.30 a.m.
- June 13 (Sat.) to 14 (Sun.).—Permanent Way Institution, visit to Dawlish Warren.
- June 15 (Mon.) to 17 (Wed.).—British Iron & Steel Research Association, at Ashorne Hill, Leamington Spa. Conference on Heat Treatment Practice.
- June 18 (Thu.).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, from 7.45 to 12 p.m. Conversation.
- June 20 (Sat.).—British Railways, Southern Region, Lecture & Debating Society. Afternoon visit to London Transport Garage at Reigate.

### Railway Stock Market

Uncertainties as to international affairs made stock markets cautious, and values in most sections again moved lower. Even British Funds, after their renewed rise last week, were inclined to ease, but they attracted main buying interest. Sentiment as to industrial shares remained under the influence of the lower profits reported by many companies, though dividends generally are maintained and they are mostly well below the rate of earnings shown on the shares.

Unless there is expansion in export trade there will be difficulty in keeping profits at last year's levels. The City therefore was pleased that Mr. Butler has had frank discussions with American statesmen and told them that he is disappointed with the trend in dollar trade. It is recognised that no early reduction in U.S.A. tariffs can be expected, and that this may have to await a wider scheme for expanding world trade.

Foreign rails have been very quiet this week and were moderately lower where changed, though this was attributed mainly to the small demand in evidence; little selling was reported.

White Pass no par value shares, however, declined further to \$30, while the convertible debentures fell to £105½. Speculation in White Pass shares has fallen off in the absence of confirmation of recent rumours of a possible bid for control by U.S.A. interests.

United of Havana stocks have been steadier after their recent decline. The assumption now is that an early takeover for the railway by the Cuban Government is unlikely. The United of Havana directors have issued a statement regretting that the agreement covering the big purchase of Cuban sugar by Britain did not include any provision for a partial payment in respect of the company's assets in Cuba. They say that for some time past they have been stressing to the British Government that a propitious stage had been reached for negotiations for the sale of the railway in exchange for sugar. At the time of going to press United of Havana 4 per cent "A" stock is changing hands around 64, the 4 per cent "B" around 54, while the second income stock is 20½ and the consolidated stock 43.

Antofagasta preference stock receded to 43½; the ordinary stock was 9. A good feature was activity in Guayaquil & Quito

5 per cent bonds up to 51 on hopes of a debt settlement.

Costa Rica ordinary stock changed hands around 12 and the 6½ per cent second debentures up to close on 60. Dorada ordinary stock has been rather more active up to 56½, while the 6 per cent first debentures were dealt in at slightly over 90.

Canadian Pacifics were \$48½, with the 4 per cent preference stock £64½ and the 4 per cent debentures £82½.

Mexican Central "A" debentures remained firmer at 70½, while Nitrate Rails shares were 21s. 6d. and Taltal shares 16s. Manila Railway stocks attracted little attention; the "A" debentures were 82 and the 5 per cent preference shares 8s. 6d. San Paulo units were 6s. 1½d.

Road transport shares held steady, with West Riding 33s., Southdown 32s. 6d., and Lancashire Transport 47s. 6d. B.E.T. deferred stock was a good feature with an advance to £540 on market hopes of a higher dividend.

Engineering and kindred shares have been reactionary, partly because of the general trend in industrials, and partly of the higher wages claims. Vickers were 46s. 9d. and Cammell Laird 5s. shares at 11s. 9d. were also relatively steady, awaiting the annual meetings for news whether both companies plan to repurchase their former English Steel interests. It is realised that no definite decision can be made at this stage, because this must depend on the terms offered for repurchasing. Guest Keen have receded to 47s. 9d. partly because the dividend is not being increased. It is pointed out, however, that had taxation not absorbed much more this time, a higher dividend would probably have been paid; the rise in taxation was due to E.P.L. and this tax ends on January 1 next. Guest Keen is another company which will have an opportunity to repurchase its former steel assets. Another point which the market is discussing is whether companies which will have a chance to reacquire former steel assets would have to raise additional capital to do this.

Beyer Peacock were 33s. xd., Hurst Nelson 41s., North British Locomotive 13s. 6d. xd., Vulcan Foundry 20s. xd., and Wagon Repairs 5s. shares 12s. Central Wagon were 67s. Charles Roberts 5s. shares changed hands around 14s. 6d.